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ABSTRACT

This field guide is designed to permit observers to identify the cetaceans (whales, dolphins, and porpoises) they see in western North Atlantic, including the Caribbean Sea, the Gulf of Mexico, and the coastal waters of the United States and Canada. The animals described are not grouped by scientific relationships but by similarities in appearance in the field. Photographs of the animals in their natural environment are the main aids to identification. A dichotomized key is provided to aid in identification of stranded cetaceans and appendices describe how and to whom to report data in live and dead cetaceans. (Author/CP)

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ED160408

NOAA Technical Report NMFS CIRC-396

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Whales, Dolphins, and Porpoises of the Western North Atlantic

A Guide to Their Identification

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
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STEPHEN LEATHERWOOD, DAVID K. CALDWELL,
and HOWARD E. WINN

with special assistance by
William E. Schevill and Melba C. Caldwell

SEATTLE, WA
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and HOWARD E. WINN

with special assistance by
William E. Schevill and Melba C. Caldwell

SEATTLE, WA
AUGUST 1976

UNITED STATES
DEPARTMENT OF COMMERCE
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NATIONAL OCEANIC AND
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PREFACE

In March 1972, the Naval Undersea Center (NUC), San Diego, Calif. in cooperation with the National Marine Fisheries Service (NMFS), Tiburon, Calif. published a photographic field guide—*The Whales, Dolphins and Porpoises of the Eastern North Pacific. A Guide to Their Identification in the Water,* by S. Leatherwood, W.E. Evans, and D.W. Rice (NUC TP 282). This guide was designed to assist the layman in identifying the cetaceans he encountered in that area and was intended for use in two ongoing whale observer programs, NUC's Whale Watch and NMFS's Platforms of Opportunity. The rationale of these programs was that since oceanographers, commercial and sport fishermen, naval personnel, commercial seamen, pleasure boaters, and coastal aircraft pilots together canvas large areas of the oceans which scientists specializing in whales (cetologists) have time and funds to survey only occasionally, training those persons in species identification and asking them to report their sightings back to central data centers could help scientists more clearly understand distribution, migration, and seasonal variations in abundance of cetacean species. For such a program to work, a usable field guide is a requisite. Because the many publications on the whales, dolphins, and porpoises of this region were either too technical in content or too limited in geographical area or species covered to be of use in field identification, and because conventional scientific or taxonomic groupings of the animals are often not helpful in field identification, the photographic field guide took a different approach. Instead of being placed into their scientific groups, species were grouped together on the basis of similarities in appearance during the brief encounters typical at sea. Photographs of the animals in their natural environment, supplemented by drawings and descriptions or tables distinguishing the most similar species, formed the core of the guide.

Despite deficiencies in the first effort and the inherent difficulties of positively identifying many of the cetacean species at sea, the results obtained from the programs have been encouraging. Many seafarers who had previously looked with disinterest or ignorance on the animals they encountered became good critical observers and found pleasure in the contribution they were making. The potential for the expansion of such observer programs is enormous.

Because of these initial successes and the large number of requests for packets from persons working at sea off the Atlantic coast of North America, this guide was planned. Many of the errors and deficiencies of the Pacific Guide have been corrected, and the discussions of the ranges of many of the species have been expanded with considerations of the major oceanographic factors affecting their distribution and movements. While the present volume, like the Pacific Guide, is intended as an aid to the identification of living animals at sea, new materials have been provided to aid in the identification and reporting of stranded specimens, a major source of data and study material for museums. This new dimension is expected to assist the U.S. National Museum, various regional museums, and other researchers actively collecting cetacean materials for display and study in the implementation of their stranded animal salvage programs. Through a cooperative effort of this kind, the best possible use can be made of all materials that become available.

As a part of continuing research, this guide will be revised whenever possible. Suggestions for its improvement will at all times be welcome.

Funds for the preparation of this guide were provided by a grant to Stephen Leatherwood from the Platforms of Opportunity Program, National Marine Fisheries Service, National Oceanic and Atmospheric Administration, Tiburon, Calif., Paul Sund, Coordinator.

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Whales, Dolphins, and Porpoises of the Western North Atlantic

A Guide to Their Identification

STEPHEN LEATHERWOOD,[1] DAVID K. CALDWELL,[2] and
HOWARD E. WINN[3]

with special assistance by
William E. Schevill[4] and Melba C. Caldwell[2]

ABSTRACT

This field guide is designed to permit observers to identify the cetaceans (whales, dolphins, and porpoises) they see in the western North Atlantic, including the Caribbean Sea, the Gulf of Mexico, and the coastal waters of the United States and Canada. The animals described are grouped not by scientific relationships but by similarities in appearance in the field. Photographs of the animals in their natural environment are the main aids to identification.

A dichotomized key is provided to aid in identification of stranded cetaceans and appendices describe how and to whom to report data on live and dead cetaceans.

INTRODUCTION

All whales, dolphins, and porpoises belong to an order or major scientific group called the Cetacea by scientists. They are all mammals (air-breathing animals which have hair in at least some stage of their development, maintain a constant body temperature, bear their young alive, and nurse them for a while) which have undergone extensive changes in body form (anatomy) and function (physiology) to cope with a life spent entirely in the water. The breathing aperture(s), called a blowhole or blowholes, has (have) migrated to the top of the head to facilitate breathing while swimming; the forward appendages have become flippers; the hind appendages have nearly disappeared, they remain only as small traces of bone deeply imbedded in the muscles. Propulsion is provided by fibrous, horizontally flattened tail flukes.

Scientists recognize two suborders of living cetaceans: the whalebone whales, suborder Mysticeti, and the toothed whales, suborder Odontoceti. The two groups are separated in the following ways:

BALEEN OR WHALEBONE WHALES. These animals are called whalebone whales because when fully formed instead of teeth they have up to 800 or more plates of baleen or whalebone depending from the roof of the mouth. They use these plates to strain their food, which consists of "krill" (primarily small crustaceans) and/or small schooling fish, by taking water into the mouth and forcing it out through the overlapping fringes of the baleen plates. Baleen whales are externally distinguishable from toothed whales by having paired blowholes. There are eight species of baleen whales in the western North Atlantic, ranging in size from the minke whale (just over 30 feet [about 9.1 m])[5] to the blue whale (85 feet [25.9 m]).

TOOTHED WHALES. Unlike the baleen whales, the toothed whales do have teeth after birth. The teeth vary in number from 2 to over 250, though they may sometimes be concealed beneath the gum. In addition, toothed whales have only a single blowhole. This group includes the animals commonly called dolphin or porpoise as well as some commonly called whales (for example, the sperm whale). There are currently about 30 species of toothed whales known from the western North Atlantic, ranging in maximum adult size from the common or harbor porpoise, which is approximately 5 feet (1.5 m) long, up to the sperm whale which reaches a length of 68 feet (20.7 m). Several other species which are expected to be found in this region, though they have not yet been reported, are also included in this guide.

CLASSIFICATION OF CETACEANS

In addition to the two suborders (Mysticeti and Odontoceti), the cetacean order contains numerous families, genera, and species. Each of these groupings represents a progressively more specialized division of the animals into categories on the basis of similarities in their skulls,

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[4] Woods Hole Oceanographic Institution, Woods Hole, MA 02543 and Museum of Comparative Zoology, Harvard University, Cambridge, MA 02138.

[5] Throughout this guide, measurements are given first in feet or inches, followed in parentheses by their equivalents in meters or centimeters. It is recognized that field estimates cannot be as precise as most of the conversions used.

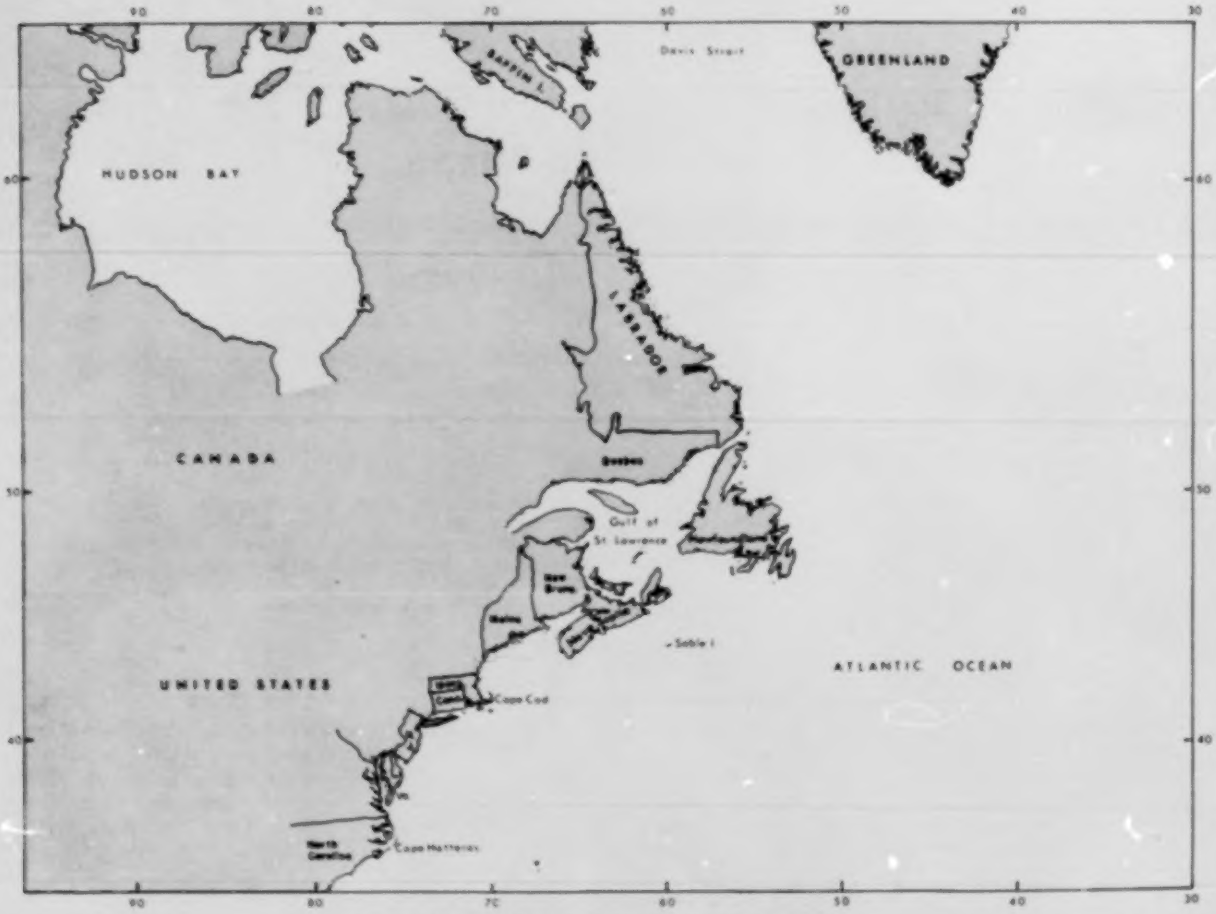


Figure 1.—The western North Atlantic, from lat. 35°N-65°N.

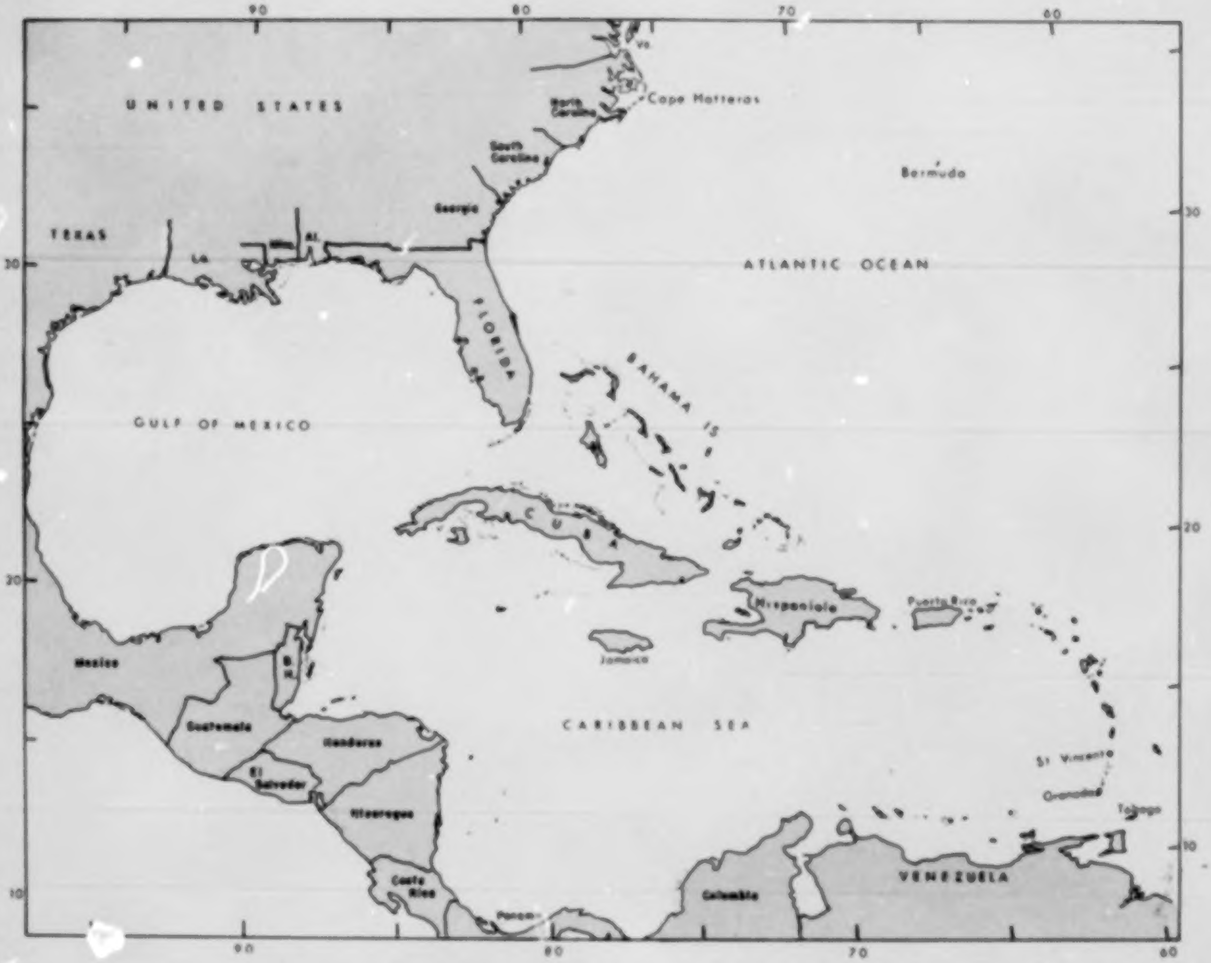
postcranial skeletons, and external characteristics. The discipline which concerns itself with naming an animal and assigning it to its appropriate scientific category is known as taxonomy. An example of the classification of a cetacean species is shown in the following:

SCIENTIFIC CLASSIFICATION OF THE ATLANTIC BOTTLENOSED DOLPHIN

Kingdom:	Animalia	all animals
Phylum:	Chordata	having at some stage a notochord, the precursor of the backbone
Subphylum:	Vertebrata	animals with backbones—fishes, amphibians, reptiles, birds, and mammals
Class:	Mammalia	animals that suckle their young
Order:	Cetacea	carnivorous, wholly aquatic mammals: whales, including dolphins and porpoises
Suborder:	Odontoceti	toothed whales as distinguished from Mysticeti, the baleen whales
Family:	Delphinidae	dolphins
Genus:	*Tursiops*	bottlenosed dolphins
Species:	*truncatus*	Atlantic bottlenosed dolphin

Modern taxonomy had its origin with the Swedish naturalist Linnaeus, whose tenth edition of the *Systema Naturae* in 1758 forms the official starting point. Following Linnaeus, modern scientific names consist of two words, a generic name, which has an initial capital, and a species name, which rarely does, occasionally in botany (some species names deriving from a person's name are capitalized). Both names are usually of Latin origin (sometimes Greek) and are italicized or underlined. These scientific names are of particular importance because, although common names of species often are different in different countries or even in different regions of the same country, the scientific name remains the same. For example, the right whale is universally known as *Eubalaena glacialis* though its common names include black right whale, nordcaper, sletbag, Biscay whale, and Biscayan right whale.

Although classification of many species is still in a state of flux, the classification of western North Atlantic cetaceans followed in this guide is as follows: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20
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UNITED STATES
Va.
North Carolina
Cape Hatteras
South Carolina
Georgia
Bermuda
TEXAS
La.
Miss.
Al.
ATLANTIC OCEAN
FLORIDA
BAHAMA IS
GULF OF MEXICO
CUBA
Hispaniola
Puerto Rico
Jamaica
Mexico
B. H.
Guatemala
Honduras
El Salvador
Nicaragua
CARIBBEAN SEA
St Vincent
Grenada
Tobago
Costa Rica
Panama
Colombia
VENEZUELA

Figure 2.—The western North Atlantic, from lat. 37°N south to eastern Venezuela.

			Page of synoptic account of the species
Order Cetacea			
Suborder Mysticeti—Baleen whales			
Family Balaenopteridae—Rorquals			
Balaenoptera acutorostrata	Lacepède 1804	Minke whale	63
Balaenoptera physalus	(Linnaeus 1758)	Fin whale	26
Balaenoptera musculus	(Linnaeus 1758)	Blue whale	19
Balaenoptera borealis	Lesson 1828	Sei whale	32
Balaenoptera edeni	Anderson 1879	Bryde's whale	37
Megaptera novaeangliae	(Borowski 1781)	Humpback whale	40
Family Balaenidae—Right whales			
Balaena mysticetus	Linnaeus 1758	Bowhead whale	49
Eubalaena glacialis	(Borowski 1781)	Right whale	52
Suborder Odontoceti—Toothed whales			
Family Ziphiidae			
Mesoplodon bidens	(Sowerby 1804)	North Sea beaked whale	82
Mesoplodon densirostris	(Blainville in Desmarest 1817)	Dense-beaked whale	80

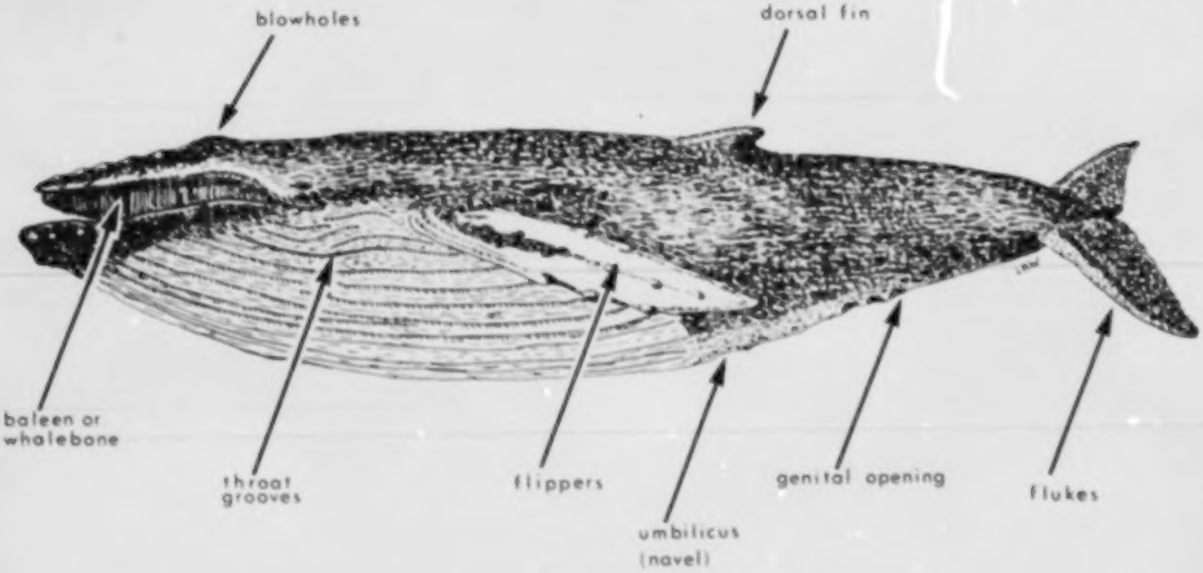

Figure 3. – A baleen whale (humpback) showing the main body parts referred to in the text.

Mesoplodon europaeus	(Gervais 1855)	Antillean beaked whale	78
Mesoplodon mirus	True 1913	True's beaked whale	77
Ziphius cavirostris	G. Cuvier 1823	Goosebeaked whale	70
Hyperoodon ampullatus	(Forster 1770)	Northern bottlenosed whale	67
Family Physeteridae			
Physeter catodon	Linnaeus 1758	Sperm whale	57
Kogia breviceps	(Blainville 1838)	Pygmy sperm whale	144
Kogia simus	(Owen 1866)	Dwarf sperm whale	148
Family Monodontidae			
Monodon monoceros	Linnaeus 1758	Narwhal	102
Delphinapterus leucas	(Pallas 1776)	Beluga	99
Family Stenidae			
Steno bredanensis	(G. Cuvier in Lesson 1828)	Rough-toothed dolphin	135
Sotalia guianensis	(P.-J. van Beneden 1864)	Guiana dolphin	132
Family Delphinidae			
Peponocephala electra	(Gray 1846)	Many-toothed blackfish	142
Feresa attenuata	Gray 1874	Pygmy killer whale	138
Pseudorca crassidens	(Owen 1846)	False killer whale	88
Globicephala melaena	(Traill 1809)	Atlantic pilot whale	91
Globicephala macrorhynchus	Gray 1846	Short-finned pilot whale	94
Orcinus orca	(Linnaeus 1758)	Killer whale	84
Lagenorhynchus albirostris	Gray 1846	White-beaked dolphin	126
Lagenorhynchus acutus	(Gray 1828)	Atlantic white-sided dolphin	123
Lagenodelphis hosei	Fraser 1956	Fraser's dolphin	120
Tursiops truncatus	(Montagu 1821)	Bottlenosed dolphin	128
Grampus griseus	(G. Cuvier 1812)	Grampus	96
Stenella longirostris	Gray 1828	Spinner dolphin	110
Stenella frontalis	(G. Cuvier 1829)	Bridled dolphin	108
Stenella coeruleoalba	(Meyen 1833)	Striped dolphin	113
Stenella plagiodon	(Cope 1866)	Spotted dolphin	104
Delphinus delphis	Linnaeus 1758	Saddleback dolphin	116
Family Phocoenidae			
Phocoena phocoena	(Linnaeus 1758)	Harbor porpoise	150

This tentative classification follows an unpublished list by W.E. Schevill and E.M. Mitchell currently under review. The scientific names are followed by the name of the individual who named the species and the year of naming, and then by

Figure 4. – A fin whale in the North Atlantic with the paired blowholes open during respiration. The paired blowholes distinguish this animal as a baleen whale. (*Photo by W. A. Watkins.*)

the common name most often used in the western North Atlantic.[3] It may be noted that some of the authors are in parentheses. This indicates that though the species name has remained the same since the date of naming the species has since been assigned to another genus. Because the species are not arranged in taxonomic order in this field guide, the page of the synoptic account of each is provided in the column to the right.

DOLPHIN OR PORPOISE

There is still considerable controversy over the correct usage of the terms dolphin and porpoise. As mentioned in the preceding section, common names of any species may vary from locale to locale and even from individual to individual. Some persons argue for the use of the term porpoise for all small cetaceans. Others insist on the term dolphin. Still others either randomly use the terms or call members of the family Delphinidae dolphins and members of the family Phocoenidae porpoises. The evidence supporting any one of these positions is confusing at best and no usage of terms appears to be without problems. We see no wholly satisfactory resolution to the problem at this time. For all these reasons, we have little desire to defend our decision to follow the last of these practices in this guide, referring to all members of the family Delphinidae for which the term dolphin or porpoise appears in the common name as dolphins, and to the one member of the family Phocoenidae represented in the western North Atlantic, *Phocoena phocoena*, as the harbor porpoise. Although all cetaceans may be regarded as whales, the term "whale" most commonly applies to the larger animals. For all species treated, other common names by which they may be known are also listed.

Detailed treatment of the relative merits of the various terminologies is inappropriate here. Furthermore, it is our opinion that the usage of the terms dolphin, porpoise, and whale as part of the common names of cetaceans is largely a matter of personal preference.

ORGANIZATION OF THE GUIDE

The differences between baleen and toothed whales are easy enough to see in animals washed up on the beach or maintained in a tank at a zoo or aquarium. But since an animal at sea can seldom be examined that closely, its most obvious characteristics may be its overall size, the presence or absence of a dorsal fin, its prominent coloration or markings, its general behavior, or its swimming, blowing, and diving characteristics. For that reason, regardless of their scientific relationships, all the whales, dolphins, and the one porpoise covered in the main text of this guide are divided into three groups. Those over 40 feet (12.2 m) long are discussed in the section on Large Whales, those from 13 to 40 feet (4.0 to 12.2 m) in the Medium-Sized Whale, and those less than 13 feet (4.0 m) in the Small Whales, Dolphins, and Porpoise (with a dorsal fin). There are no small whales, dolphins, or porpoises in this region without a dorsal fin. Each section is further divided into those animals with a dorsal fin and those without. From that point, animals likely to be confused in the field are grouped together and the important differences between them are discussed.

The synoptic accounts of the species are followed by five appendices: Appendix A discusses and illustrates man-made and applied tags and natural markings on cetaceans and their importance in studies of natural history. Appendix B discusses the data which are most important to record in observations of cetaceans at sea, gives examples, and provides blank sighting forms. Appendix C discusses possible causes of cetacean strandings and the manner in which stranded animals should be handled and adds a key and tables to aid in identifying stranded cetaceans. Appendix D provides guidelines for collecting data on stranded cetaceans and provides forms and specific instructions for taking standard measurements. Appendix E lists institutions to be contacted in the event of a cetacean stranding or for information.

A bibliography of useful references on cetaceans in general and cetaceans of this region in particular and a directory to species accounts are included.

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[3] Most common names are based on some characteristic of the species (e.g., spotted dolphin, striped dolphin, rough-toothed dolphin); others are the names of authors of the species (e.g., True's beaked whale) or of habitats or macrohabitats which they inhabit (e.g., North Sea beaked whale and harbor porpoise); the origins of some common names, however, are less obvious (e.g., dense-beaked whale), and of less use in field references.

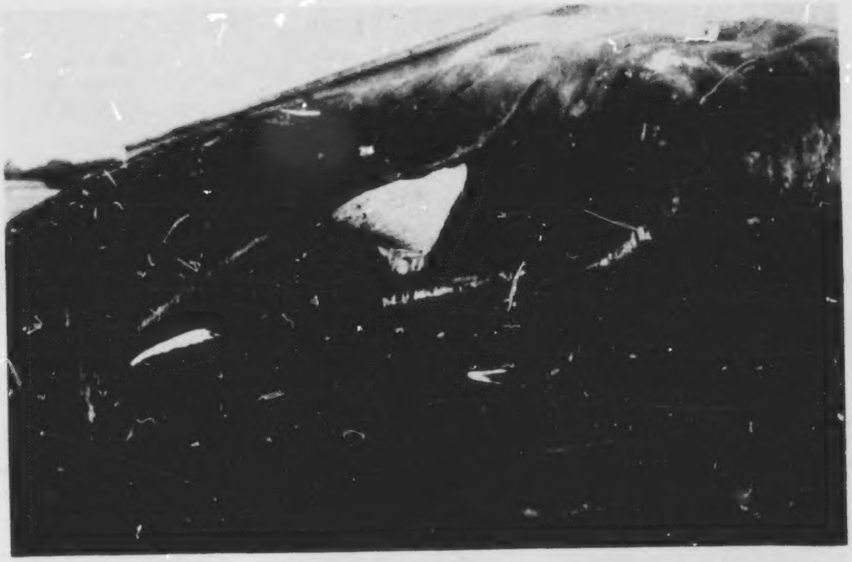
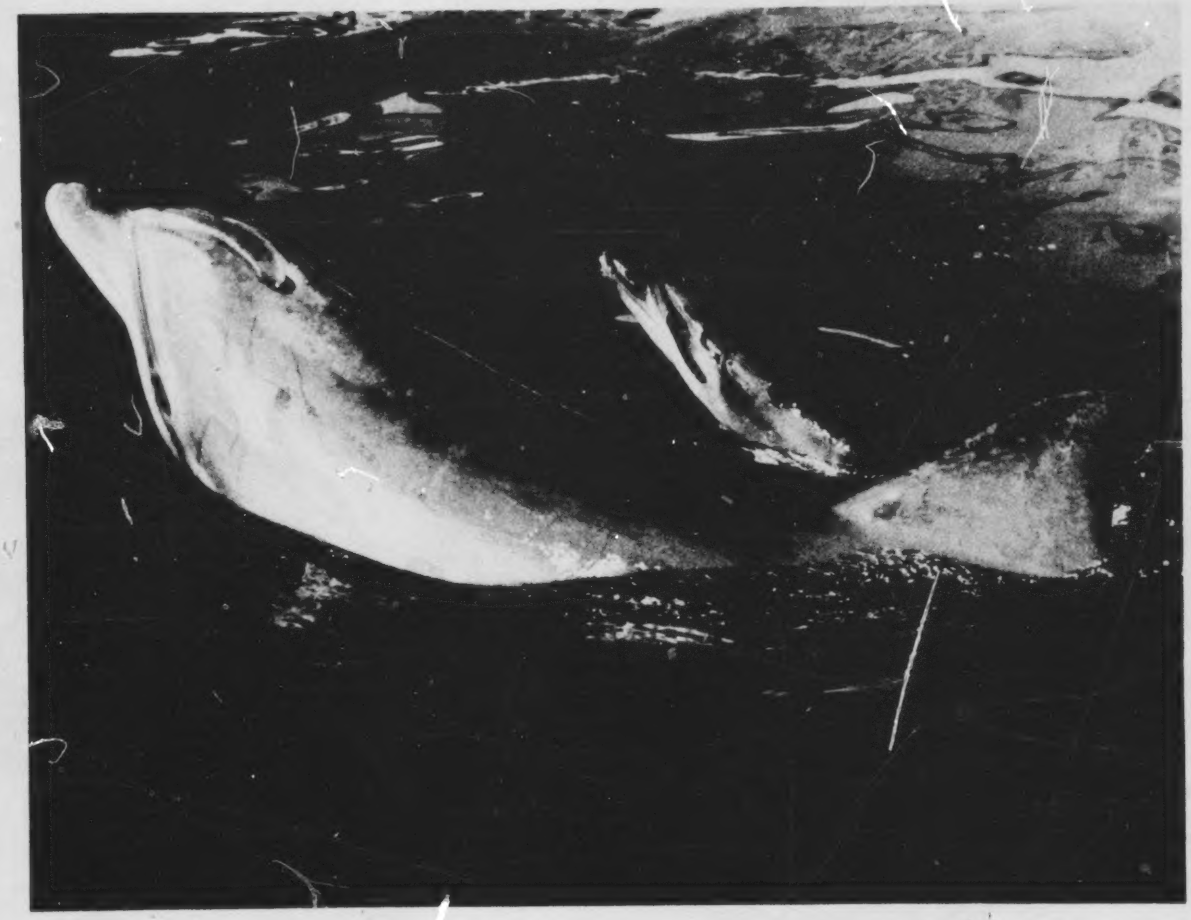


Figure 5.—A humpback whale lying on its left side on the deck of a Canadian whaling station. Note the fringes of baleen suspended from the roof of the mouth. (*Photo by J. G. Mead.*)



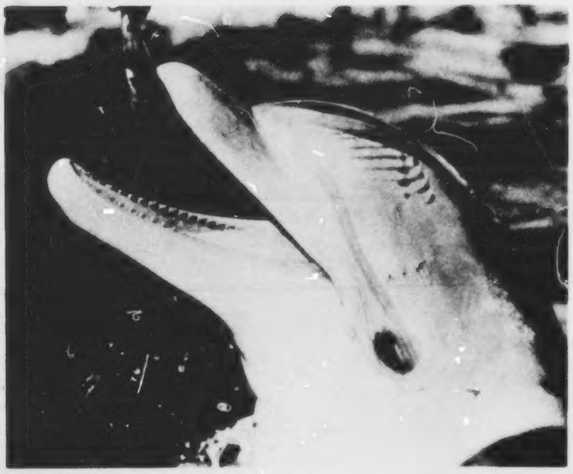


Figure 7.—The open mouth of an Atlantic bottlenosed dolphin from the northeastern Gulf of Mexico. All toothed whales have teeth, which are used primarily for grasping rather than for chewing. The number varies from 2 to over 250, though they are buried beneath the gums in females and immature animals of several species, take peculiar form in one (narwhal), and are extensively worn in others. (*Photo by D. K. Caldwell.*)

HOW TO USE THE GUIDE

To Identify Animals at Sea

The three major sections of the guide (i.e., large, medium, and small whales) are preceded by a directory to species accounts, which is a summary of the most obvious characteristics of each species and in which summary statements about each characteristic are arranged in parallel order. To use the guide to identify living animals observed at sea, a person or persons should:

1. First estimate the animal's size and determine whether or not it has a dorsal fin.
2. Note also any distinctive features of body shape and coloration and observe its general behavior, including swimming, blowing, and diving characteristics. It should be noted that coloration may vary somewhat at sea, depending on light conditions and water clarity. For example, animals which appear dark gray or black at the surface or when dead may appear brown in good light or when submerged. Making a brief sketch at this point may aid in identifying the animal or in later recalling its distinctive features.
3. Using the directory, locate the section to which the animal probably belongs.
4. Then, for more detailed information, consult the section indicated. There you will find a more complete discussion of the animal's range, size, and distinctive characteristics. In addition, you will find a brief discussion distinguishing it from animals with which it is likely to be confused in the field.

Figure 6.—Atlantic bottlenosed dolphin mother and calf from northeastern Florida. Note the single open blowhole, a characteristic that marks these animals as toothed whales. (*Photo courtesy of Marineland of Florida.*)

This guide will probably work best if, in advance of attempting to use the key in the field, the reader will familiarize himself with the general outline, with characters or behaviors to note, and with the locations of the various species accounts. It will also help if he schools himself to ask a series of questions about the animal(s) he sees at the time of the encounter rather than depending on his recall at a later time (see p. 160). As we have emphasized several times in this guide, positive identification of cetaceans at sea can only occasionally be made on the basis of a single characteristic. Therefore, the greater the amount of pertinent evidence an observer obtains, the greater the likelihood he can make a reliable identification.

To Identify Stranded Animals

Stranded animals can best be identified by referring to Appendix C and its associated tables, making a preliminary determination and then consulting the species accounts in the main body of the book for verification of the identification. As noted in that appendix, if the animal is recently stranded, identification can be made using any of the externally visible characteristics described for the living species at sea. But even if the animal is in an advanced stage of decomposition, it can usually be identified by referring to the key and to the numbers and descriptions of baleen plates, for all baleen whales, and the numbers and relative lengths of ventral grooves, for all balaenopterine whales (Table 1), or to the tables on the numbers and descriptions of teeth, for toothed whales (Table 2).

To Record and Report Information

As discussed in the preface, though learning to identify the whales, dolphins, and porpoises one sees may be exciting in itself, many persons may want to participate in the accumulation of data on these interesting animals by routinely reporting their observations to scientists who are actively studying them and who can make immediate use of the information. The following may help these persons:

Suggestions for making and recording observations of cetaceans at sea and sample data forms are included in Appendix C. Similar suggestions for taking and recording data on stranded cetaceans are included in Appendix D. For both types of data, blank data forms located after the appendices may be photocopied in bulk for use in the field.

Completed data forms and all associated information for sightings at sea should be forwarded to the Platforms of Opportunity Program, National Marine Fisheries Service, Tiburon, CA 94920, or to one of the authors of this guide. From there, they will be made available to scientists actively studying the cetaceans of a given species or geographical area.

Completed data forms and all associated information for observations of stranded cetaceans should be forwarded to the Division of Mammals, U.S. National Museum, Washington, DC 20560, to one of the authors of this guide, or to one of the regional laboratories listed in Appendix E. These persons have, in turn, been encouraged to keep a free flow of information among them.

Table 1. Ranges in Numbers of Teeth in Each Upper and Lower Jaw of Western North Atlantic Odontocetes.

Species common name	Species scientific name	Page of species account	Ranges in tooth counts		Remarks
			Upper	Lower	
Sperm whale	*Physeter catodon*	57	0	18-25	Ten to sixteen upper teeth *rarely* emerge; lower teeth fit into sockets in upper jaw.
Northern bottlenosed whale	*Hyperoodon ampullatus*	67	0	2(2)[a]	At tip of lower jaw; sometimes second pair behind first.
Goosebeaked whale	*Ziphius cavirostris*	70	0	2[a]	At tip of lower jaw.[b]
True's beaked whale	*Mesoplodon mirus*	77	0	2[a]	At tip of lower jaw.[b]
Antillean beaked whale	*Mesoplodon europaeus*	78	0	2[a]	At suture of mandible. One-third of way from tip of snout to gape.[b]
Dense-beaked whale	*Mesoplodon densirostris*	80	0	2[a]	On prominences near corner of mouth; oriented backwards.[b]
North Sea beaked whale	*Mesoplodon bidens*	82	0	2[a]	About halfway from tip of snout to gape.[b]
Killer whale	*Orcinus orca*	84	10-12	10-12	Prominent; curved and oriented backwards and inwards; pointed.
False killer whale	*Pseudorca crassidens*	88	8-11	8-11	Prominent; pointed and curved.
Atlantic pilot whale	*Globicephala melaena*	91	8-10	8-10	– –
Short-finned pilot whale	*Globicephala macrorhyncha*	94	7-9	7-9	– –
Grampus	*Grampus griseus*	96	0	0-7	Near front of jaw; may have fallen out in older specimens; sometimes teeth in upper jaw.
Beluga	*Delphinapterus leucas*	99	8-11	8-9	– –
Narwhal	*Monodon monoceros*	102	2	0[a]	One (rarely both) grows up to 9 ft (2.5 m) tusk which has left-hand (sinestral) spiral.
Spotted dolphin	*Stenella plagiodon*	104	30-36	28-35	– –
Bridled dolphin	*Stenella frontalis*	108	29-34	33-36	– –
Spinner dolphin	*Stenella longirostris*	110	46-65	46-65	– –
Striped dolphin	*Stenella coeruleoalba*	113	43-50	43-50	– –
Saddleback dolphin	*Delphinus delphis*	116	40-50	40-50	– –
Fraser's dolphin	*Lagenodelphis hosei*	120	38-44	38-44	– –
Atlantic white-sided dolphin	*Lagenorhynchus acutus*	123	30-40	30-40	Some specimens have more teeth in upper than in lower jaw.
White-beaked dolphin	*Lagenorhynchus albirostris*	126	22-28	22-28	– –
Atlantic bottlenosed dolphin	*Tursiops truncatus*	128	20-26	18-24	– –
Guiana dolphin	*Sotalia guianensis*	132	26-35	26-35	– –
Rough-toothed dolphin	*Steno bredanensis*	135	20-27	20-27	Crown is sometimes marked with many fine vertical wrinkles.
Pygmy killer whale	*Feresa attenuata*	138	8-13	10-13	Many specimens have fewer teeth on right than on left side.
Many-toothed blackfish	*Peponocephala electra*	142	22-25	21-24	– –
Pygmy sperm whale	*Kogia breviceps*	144	0	12-16	Rarely 10 or 11; curved back and inwards; fit into sockets in upper jaw.
Dwarf sperm whale	*Kogia simus*	148	0-3	8-11	Rarely 13; curved back and in; sharply pointed; fit into sockets in upper jaw. Rarely has 1 - 3 upper teeth as well.
Harbor porpoise	*Phocoena phocoena*	150	22-28	22-28	Spade shaped, laterally compressed, and relatively small.

[a] Usually erupted from gums only in adult ♂♂.

[b] May have toothpick size vestigial teeth in either jaw.

Table 2. Body Size: Numbers, Maximum Dimensions and Descriptions of Baleen Plates; and Numbers and Relative Lengths of Ventral Grooves of W. N. Atlantic Mysticetes.

Species common name	Species scientific name	Page of species account	Maximum body size[a] ft(m)	Number of baleen plates per side	Maximum dimensions of plates				Color of baleen	Mean No. of bristles/cm	Numbers of ventral grooves	Relative lengths of ventral grooves
					Length		Width base					
					ft/in.	cm	ft/in.	cm				
Blue whale	*Balaenoptera musculus*	19	85 (26.0)	270-395	33"	84	12"	30	All black with black bristles.	10-30	55-88	At least to navel.
Fin whale	*Balaenoptera physalus*	26	79 (24.0)	262-473	29"	72	12"	30	Dark gray to bluish gray; one-fifth to one-third of right front is whitish.	10-35	56-100	At least to navel.
Sei whale	*Balaenoptera borealis*	32	62 (19.0)	318-340	31"	78	15"	39	Ash black with blue tinge and fine, light bristles; some near front may be light.	35-60	38-56	End far short of navel.
Bryde's whale	*Balaenoptera edeni*	37	46 (14.0)	250-300?	17"	42	10"	24	Slate gray with dark bristles.	15-35	40-50	At least to navel.
Humpback whale	*Megaptera novaeangliae*	40	53 (16.0)	270-400	24"	60	5"	13	Ash black to olive brown; sometimes whitish; bristles grayish white.	10-35	14-22	At least to navel.
Bowhead whale	*Balaena mysticetus*	49	65 (19.8)	325-360	14'	414	14"	36	Black; anterior side of some is whitish; bristles black.	?	None present.	× ×
Right whale	*Eubalaena glacialis*	52	53 (16.0)	250-390	7.3'	223	12"	30	Dirty or yellowish gray; some anterior plates all or part white.	35-70	None present.	× ×
Minke whale	*Balaenoptera acutorostrata*	63	31 (10.0)	300-325	8"	21	4"	10	White to yellowish white. Posterior plates may be brown or black.	15-25	50-70	End short of navel; often just behind flippers.

[a] As stated in the Index to the species, these figures represent maximum sizes recorded for the W. N. Atlantic. For all species exploited by whaling industries' current maximum sizes will be substantially smaller than these figures (see species accounts).

LARGE WHALES

(40-85 feet [12-26 m] maximum overall length)

With a Dorsal Fin

All five species of large whales with a dorsal fin belong to the same major baleen whale group, the balaenopterid whales or rorquals. All are characterized by the presence of a series of ventral grooves, usually visible on stranded specimens and the length and number of which are diagnostic to species. In addition, all species, with the exception of the humpback whale, have at least one distinctive (though often not prominent) ridge along the head from just in front of the blowhole to near the tip of the snout. (The humpback whale, on the other hand, is distinguished by numerous knobs, some of which are located along the line of the head ridge, with others scattered on the top of the head.) In Bryde's whale, the single head ridge characteristic of the other rorquals is supplemented by two auxiliary ridges, one on each side of the main ridge.

At sea, these whales often appear very similar and must be examined carefully before they can be reliably identified. In general, though the characteristics of behavior may vary from one encounter to the next, based on the activities in which the animal is engaged, whales in this group may be distinguished from each other on the basis of differences in 1) the size, shape, and position of the dorsal fin and the timing of its appearance on the surface relative to the animal's blow (in general, the larger the whale, the smaller the dorsal fin—the further back its position and the later its appearance on the surface after the animal's blow); 2) the height of body in the area of the dorsal fin, relative to the size of the dorsal fin, which is exposed as the animal sounds; 3) sometimes the blow rate and movement patterns; and 4) the shape and color of the head.

Despite variability in behavior by members of the same species from one encounter to the next, an observer can greatly increase the reliability of his identification by forming the habit of working systematically through a set of characteristics for the species rather than depending on any single characteristic.

Body very large, up to 85 feet (25.9 m) long.[1] Body basically bluish with mottlings of grayish white. Baleen all black. Head broad and nearly U-shaped, viewed from above. Head flat in front of blowhole, viewed from side. Dorsal fin small (to 13 inches [33 cm]), triangular to moderately falcate, in the last one-third of back. Distribution primarily from temperate seas to pack ice; rare in tropics. Distribution more northerly during summer. Flukes occasionally raised slightly on long dive.	**Blue whale** *Balaenoptera musculus* p. 19
Body large, up to 79 feet (24 m) long. Body mostly dark gray or brownish gray; undersides of flukes and flippers and belly white; grayish-white chevron frequently on back behind head. Right lower lip white; right upper lip sometimes white; left lip dark. Head V-shaped, viewed from above. Right front one-third to one-fifth of baleen plates, yellowish white. Other baleen bluish gray with yellowish-white stripes. Dorsal fin to 24 inches (61 cm), slightly more than one-third forward from tail; forms angle of less than 40° with back. Distribution extensive but not very common near pack ice and in tropics. Distribution more northerly during summer. Flukes not raised on dive.	**Fin whale** *Balaenoptera physalus* p. 26
Body up to 62 feet (19 m) long. Body appears shiny; dark gray on back, often with ovoid grayish-white scars; white on front of belly; undersides of flippers and flukes dark.	**Sei whale** *Balaenoptera borealis* p. 32

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[1] These figures are all near maximum sizes recorded for the North Atlantic. For all species which have historically been exploited by whale fisheries present maximum sizes may be significantly less than these figures.

It should also be noted that differences in methods of measurements often account for discrepancies in reported lengths.

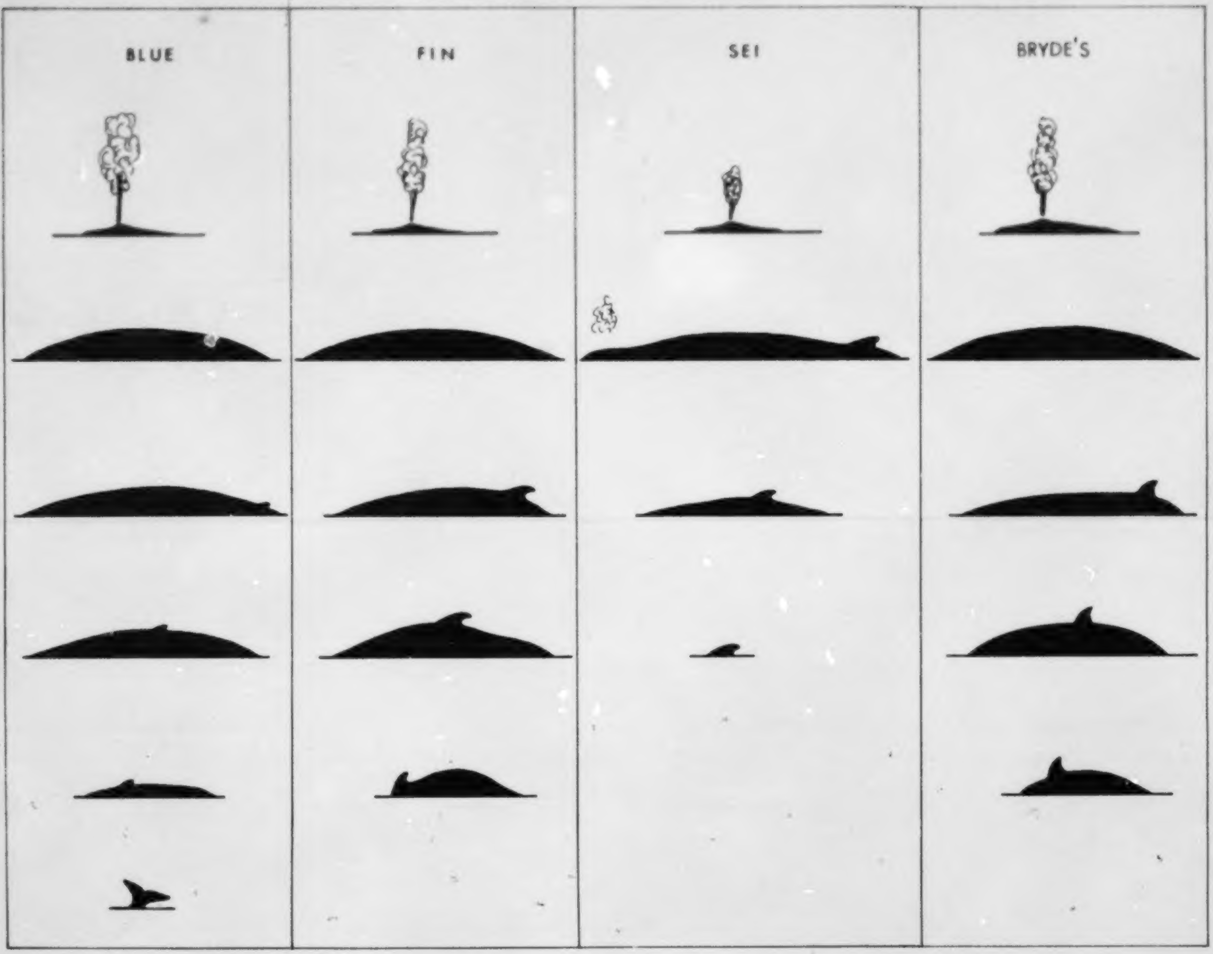

Figure 8a.—Swimming, blowing, and diving characteristics of blue, fin, sei, and Bryde's whales.

Baleen grayish or ash black with fine, light-gray bristles.
Dorsal fin to 24 inches (61 cm), strongly falcate, well more than one-third forward from tail; forms angle of more than 40° with back.
Distribution extensive; are not very common in cold waters and may have a greater tendency than fin whales to enter tropical waters.
Distribution more northerly in summer.
Flukes not raised on dive.

Body up to 46 feet (14 m) long.
Body dark gray overall.
Head has series of three ridges from area of blowhole to snout.
Baleen slate gray with coarse dark bristles.
Dorsal fin to 18 inches (45.7 cm), falcate, well more than one-third forward from tail, often irregularly worn on rear margin.
Distribution primarily tropical and southern temperate.
Flukes not raised on dive.

Bryde's whale
Balaenoptera edeni
p. 37

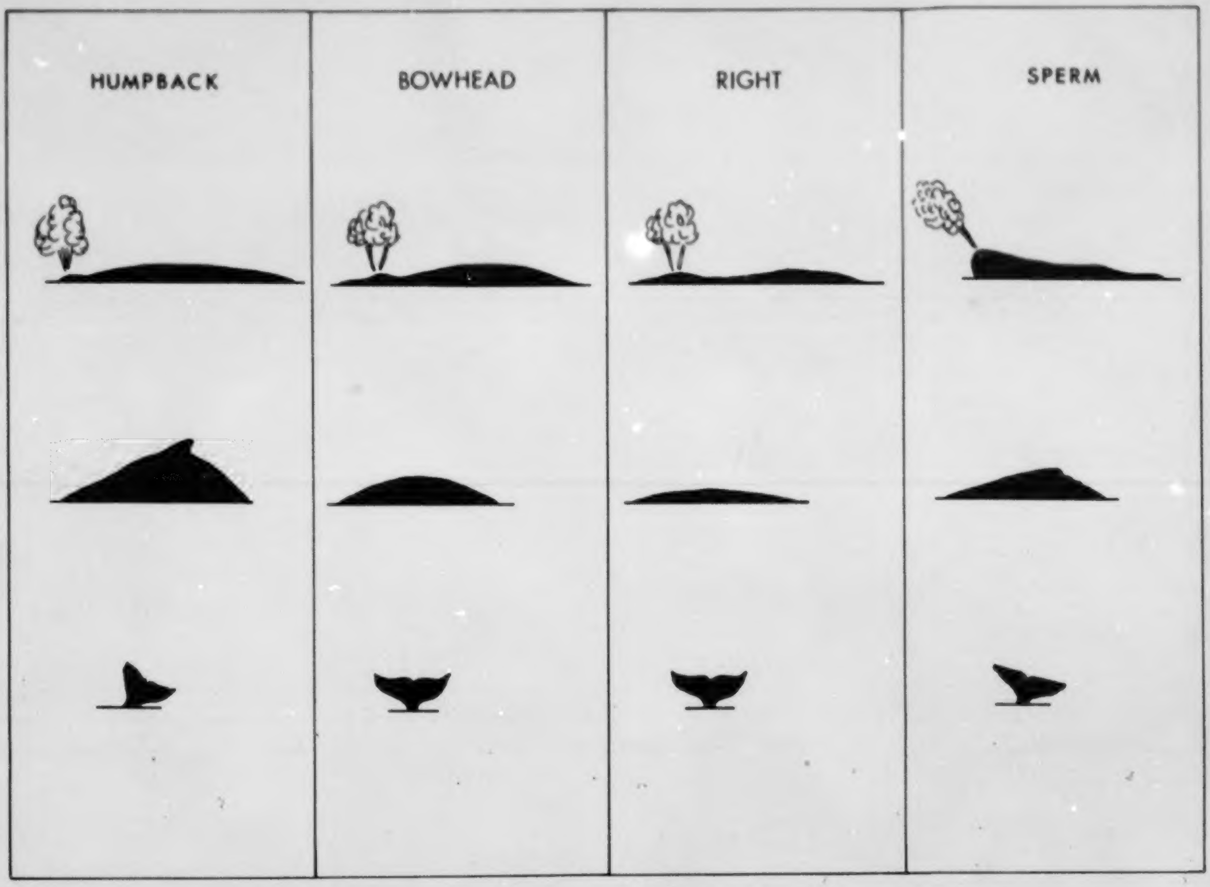

Figure 8b.—Swimming, blowing, and diving characteristics of humpback, bowhead, right, and sperm whales.

Body up to 53 feet (16.2 m) long.
Body dark gray with irregular white area on belly; flippers white; underside of flukes often has varying amounts of white.
Head in front of blowhole flat and covered with knobs.
Baleen dark gray to black with olive-black bristles.
Dorsal fin small, quite variable in shape, usually hooked, located on a step or hump, in last one-third of back.
Flippers very long (to nearly one-third of body length), white, and scalloped on leading edge.
Distribution at least New England to Iceland and Greenland during summer.
Distribution to shallow tropical banks, winter and spring.
Flukes often scalloped on trailing edges and sometimes raised on dive.

Humpback whale
Megaptera novaeangliae
p. 40

NOTE: Because of its small adult size, usually less than 30 feet (9.1m), another member of the rorqual family, the minke whale, is included with the medium-sized whales in this guide. Features by which it may be distinguished from all other rorquals are discussed in the species account.

Further, inasmuch as the dorsal fin of the humpback whale is highly variable in shape, positive identification may require reference to the sperm whale (p. 57), which, though the sperm whale has been classified with species without dorsal fin, has a rather distinct dorsal hump, particularly noticeable when the animal arches the back and tail to begin a long dive.

(40-65 feet [12-20 m] maximum overall length)

Without a Dorsal Fin

There are three species of large whales without a dorsal fin in the western North Atlantic Ocean. Two of these, the bowhead or Greenland whale, and its more widely distributed close relative the right whale, are baleen whales. The third, the sperm whale, is a toothed whale. The first two have relatively smooth backs without even a trace of a dorsal fin. The sperm whale has a humplike low, thick, dorsal ridge, which, from certain views, particularly when the animal is humping up to begin a dive, may be clearly visible and look like a fin. But because the profile of that hump and the knuckles which follow it are often not very prominent in this species, it has been classified with the finless big whales.

All three species are characterized by very distinctive blows or spouts. In both the bowhead and the right whales, the projection of the blow upward from two widely separated blowholes assumes a very wide V-shape with two distinct columns, which may be seen when the animals are viewed from front or back. Though this character may be visible under ideal conditions in many of the other baleen whales species as well, it is exaggerated and uniformly distinct in the bowhead and right whales and may be used as one of the primary key characters. In the sperm whale, the blow emanates from a blowhole which is displaced to the left of the head near the front and projects obliquely forward to the animal's left. This blow seen under ideal conditions positively labels a large whale as a sperm whale.

Remember, however, that wind conditions may affect the disposition and duration of the blow of any species and that a single character alone is seldom sufficient to permit positive identification.

Body to 65 feet (19.8 m) long.[1] Body dark; back smooth. Chin and belly often white. Head lacks callosities. Baleen dark gray with gray fringes; to 12 feet (3.7 m) or more. Upper jaw and lower lip strongly arched. Two blowholes clearly separated. Blow projects upward in wide V-shape. Distribution restricted to Arctic waters south to Davis Straits. Flukes raised on longer dives.	**Bowhead whale** *Balaena mysticetus* p. 49
Body to 53 feet (16.2 m) long. Body from dark to light gray and mottled; back smooth; chin and belly usually white. Head and lower jaw covered with callosities (the largest of which is called the bonnet and is set on top of the snout). Baleen usually dark gray with dark fringes; to 7.2 feet (2.2 m). When animals swim, mouth agape, near surface; baleen sometimes appears pale brownish to yellowish gray in color. Upper jaw and lower lip strongly arched. Two blowholes clearly separated. Blow projects upward in wide V-shape. Distribution extends from Iceland south at least to Florida and reported from Texas. Flukes raised on longer dives.	**Right whale** *Eubalaena glacialis* p. 52
Body to 69 feet (20.9 m) long; males grow significantly larger than females. Body dark grayish brown to brown; wrinkled in appearance. Back has rounded hump followed by knuckles. Head boxlike, comprises up to 40% of body length. From 18 to 25 functional teeth in each side of narrow lower jaw. Single blowhole on left of head at front. Blow projects forward obliquely from head and to left. Distribution extends from tropics to Arctic; adult males distributed farther north. Flukes raised on longer dives.	**Sperm whale** *Physeter catodon* p. 57

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[1] These figures are near maximum sizes recorded for the North Atlantic. All three species have been heavily exploited by whale fisheries. Therefore maximum sizes today may be significantly less than these figures (see text).

It should also be noted that differences in methods of measurements often account for discrepancies in reported lengths.

MEDIUM-SIZED WHALES

(13-32 feet [4-10 m] maximum overall length)

With a Dorsal Fin

There are 11 species of medium-sized whales with a dorsal fin known from the western North Atlantic. These species, taking many diverse forms, range in maximum adult size from about 13 feet (4.0 m) (grampus) to about 33 feet (10.1 m) (the minke whale). This group includes such widely distributed and frequently encountered species as the pilot whales, false killer whales, and minke whales, and such rarely encountered and poorly known species as the various "beaked whales" (*Mesoplodon* spp. and the goosebeaked whale).

Aside from their common inclusion within the stated size range and the presence of a dorsal fin in all species (which ranges from only a small nubbin in some of the beaked whales to a substantial 5- to 6-foot [1.5- to 1.8-m] sail on adult male killer whales), these species have no diagnostic field characteristics in common. Therefore, each is discussed in detail and is placed in the text in near proximity to those species with which it is likely to be confused in the field.

Body to 30 feet (9.1 m), or more, long. Body black or dark gray; area of gray shading on each side just in front of and below dorsal fin. Flippers have transverse white band. Head very sharply V-shaped viewed from above. Dorsal fin falcate and distinct; usually appears simultaneous with blow. Blow often low and indistinct. Distribution polar, temperate, and tropical; frequently coastal. Often curious about boats. Flukes not raised on dive.	**Minke whale** *Balaenoptera acutorostrata* p. 63
Body to 32 feet (9.8 m) long. Body of young uniformly chocolate brown; body of adults brown with cream or yellow blotches. Head bulbous in adults and white in larger animals; has distinct beak. Dorsal fin falcate and distinct, in last one-third of back. Distribution north temperate and Arctic-offshore. Often curious about boats. Flukes large, rarely notched; occasionally raised on long dive.	**Northern bottlenosed whale** *Hyperoodon ampullatus* p. 67
Body to at least 23 feet (7 m) long. Body from dark gray or brown to rust or fawn and splotched with white; eyes dark. Head of large males white. Back frequently scarred with numerous scratches, presumably tooth marks. Dorsal fin falcate and distinct, in last one-third of back. Distribution primarily tropical; extends to temperate. Flukes light beneath, sometimes shallowly notched; often raised on dive.	**Goosebeaked whale** *Ziphius cavirostris* p. 70
Body to 16-22 feet (4.9-6.7 m) long. Body color black to dark gray. Back frequently scarred. Dorsal fin position varies with species. Distribution varies with species. Flukes not usually distinctly notched.	**All other western North Atlantic beaked whales** *Mesoplodon* spp. p. 74
Body to at least 30 feet (9.1 m) long. Body black with sharply demarcated white belly and oval white patch above and behind eye; gray saddle behind dorsal fin. Body chunky. Dorsal fin in males can be very tall, sometimes 6 feet (1.8 m). Dorsal fin in females and immature animals up to 3 feet (0.9 m), distinctly falcate.	**Killer whale** *Orcinus orca* p. 84

Distributed from tropics to Arctic; most common in colder waters.
Often seen in shallow bays and rivers and near shore.
Flukes may be raised on dive.

Body to at least 18 feet (5.5 m) long.
Body black (faint gray blaze on belly between flippers).
Body slender.
Head small, tapering.
Large prominent teeth frequently visible at sea.
Flippers have distinct hump on leading edge.
Dorsal fin to 14 inches (35.6 cm), falcate, and from rounded to pointed on tip.
Distribution pelagic tropical to warm temperate seas.
Frequently ride bow waves.

False killer whale
Pseudorca crassidens
p. 88

Body to at least 22 feet (6.7 m) long.
Body black with light gray, anchor-shaped area on chest; gray saddle sometimes seen behind dorsal fin.
Head becoming more bulbous with age, somewhat squarish in adult males viewed from above.
Tail humped.
Flippers long (to one-fifth of body length), sickle-shaped.
Dorsal fin broad-based, falcate to flaglike, in front half of back.
Distribution primarily north temperate—about Hatteras north.
Flukes not usually raised on dive.

Atlantic pilot whale
Globicephala melaena
p. 91

Body to at least 17.5 feet (5.3 m) long.
Body black with indistinct light gray area on chest; saddle behind dorsal fin.
Head becoming more bulbous with age; square in large adult males viewed from above.
Flippers relatively short (to less than one-sixth of body length).
Dorsal fin broad-based, falcate to flaglike, in front half of back.
Distribution tropical and warm temperate; from about Hatteras south.
Flukes not usually raised on dive.

Short-finned pilot whale
Globicephala macrorhynchus
p. 94

Body to at least 13 feet (4.0 m) long.
Body of newborn light gray; darkens with age.
Body of adults light gray or white; scarred with numerous scratches.
Head blunted, not beaked.
Forehead has vertical crease in center.
Dorsal fin less than 15 inches (38.1 cm), rather erect and distinct, and dark even in light adults.
Distribution tropical to temperate.
Rarely ride bow wave.

Grampus
Grampus griseus
p. 96

(13-16 feet [4-5 m] maximum overall length)

Without a Dorsal Fin

The only two species of medium-sized cetaceans in the western North Atlantic which have no dorsal fin, the Beluga or white whale and the Narwhal, share such limited common range, well outside the theater of normal boating traffic, that they are generally infrequently encountered.

Both species are easily identifiable when seen.

Body to 16 feet (4.9 m) long.
Body of adults all white; young slate gray.
Small row of bumps along back ridge near midpoint, sometimes dark brown.
Distribution usually near coast from Arctic waters to St. Lawrence Gulf and into Hudson Bay.

Beluga
Delphinapterus leucas
p. 99

Body to 16 feet (4.9 m) long.
Body of adult brownish with grayish spots; body of young dark bluish gray fading to white belly.
Head small; adults may have tusks up to 9 feet long (2.7 m).
Small row of bumps along back ridge.
Distribution usually in coastal waters from Arctic waters south to Labrador coast.

Narwhal
Monodon monoceros
p. 102

SMALL WHALES, DOLPHINS, AND PORPOISES

(less than 13 feet [4 m] maximum overall length)

With a Dorsal Fin

The species in this group are not discussed in order of length; instead the species of the genus *Stenella* are treated together and then they and other species are placed in near proximity to those animals with which they are likely to be confused in the field.

Body to 7.5-8 feet (2.3-2.4 m) long.
Body dark purplish gray on back, lighter gray on sides and belly; becomes increasingly spotted with increase in size.
Body has spinal blaze and light line from flipper to eye.
Beak white on tip.
Rides bow waves.
Distribution usually in tropical and warm temperate waters; most common inside 100-fathom curve of continents.

Atlantic spotted dolphin
Stenella plagiodon
p. 104

Body to at least 7 feet (2.1 m) long.
Body dark gray on back; lighter gray on sides and belly.
Body has no spinal blaze.
Cape on top of head distinct.
Bridle: dark lines from eye to rostrum and from flippers to corner of mouth.
Rides bow waves.
Distribution in tropical waters, primarily in West Indies.

Bridled dolphin
Stenella frontalis
p. 108

Body to at least 7 feet (2.1 m) long.
Body dark gray on back; tan on sides; white on belly.
Beak often long and slender, usually black above, white below.
Tip of snout and lips distinctly black.
Dorsal fin moderately falcate to triangular and very erect.
Rides bow waves.
Often jumps and spins on longitudinal axis.
Distribution in oceanic and coastal tropical waters.

Spinner dolphin
Stenella longirostris
p. 110

Body to about 9 feet (2.7 m) long.
Body dark gray or bluish gray on back; gray on sides; gray or white on belly.
Distinctive black stripes from: 1) eye to anus, 2) eye to flipper.
Distinctive black blaze from behind dorsal fin to side above flipper.
Rides bow waves.
Distribution temperate, subtropical, and tropical; seldom close to shore.

Striped dolphin
Stenella coeruleoalba =
Stenella styx
p. 113

Body to 8.5 feet (2.6 m); usually less than 7.5 feet (2.3 m) long.
Body brownish gray to black; belly and chest white; crisscross (hourglass) pattern of yellow tan on sides.
Distinct black stripe from center of lower jaw to flipper.
Rides bow waves.
Distribution temperate and tropical; seldom close to shore.

Saddleback dolphin
Delphinus delphis
p. 116

Body to at least 8 feet (2.4 m) long. Body very robust in front of dorsal fin, resembling cross between saddleback dolphin and Atlantic white-sided dolphin. Beak very short and indistinct. Distinct black stripe from beak to area of anus. Dorsal fin and flippers small. Distribution tropical (not yet recorded in western North Atlantic).	**Fraser's dolphin** *Lagenodelphis hosei* p. 120
Body to about 9 feet (2.7 m) long. Dorsal fin part gray, part black; tall and distinctly falcate. Distinctive patch of white on side; tan or yellow coloration below and behind dorsal fin, often visible on swimming animal. Beak short; all dark. Does not usually ride bow waves. Distribution Cape Cod to southern Greenland.	**Atlantic white-sided dolphin** *Lagenorhynchus acutus* p. 123
Body to about 10 feet (3.1 m) long. Dorsal fin all black, tall, and distinctly falcate. Two pale areas: one in front, another behind and below dorsal fin; visible on swimming animal. Beak short, sometimes brushed with white blaze. May ride bow waves. Distribution Newfoundland north in summer, Cape Cod north in winter; common close to shore at Cape Cod in spring.	**White-beaked dolphin** *Lagenorhynchus albirostris* p. 126
Body to 12 feet (3.7 m) long. Body dark gray on back; lighter gray on sides; belly white to pink. Snout robust and short. Dorsal fin tall; back curved. Ride bow waves; often turn head downwards or to the sides as they do so. Distribution temperate and tropical, usually within 20 miles of shore (often in bays, lagoons, and larger rivers) but extending off the continental shelves.	**Atlantic bottlenosed dolphin** *Tursiops truncatus* p. 128
Body to approximately 5.6 feet (1.7 m) long. Body steel blue to dark brown on back; white on belly. Dorsal fin nearly triangular; curves only slightly backward. Distribution in Lake Maracaibo and the rivers of Guiana and in the nearshore coastal waters of northeastern portion of South America.	**Guiana dolphin** *Sotalia guianensis* p. 132
Body to about 8 feet (2.4 m) long. Body dark gray to purplish gray on back with white or pink blotches on sides; belly white. Body frequently shows numerous white scars. Head tapers gradually; beak long and slender; no clear separation of beak from forehead. May ride bow waves. Distribution in deep tropical waters.	**Rough-toothed dolphin** *Steno bredanensis* p. 135
Body to 8-9 feet (2.4-2.7 m) long. Body black with white belly patch which may extend up sides in area of anus. Head rounded; no beak; lips white; lower jaw and chin may be white. Dorsal fin to 15 inches (38 cm) tall, falcate; located near midpoint of back. Distribution tropical and subtropical.	**Pygmy killer whale** *Feresa attenuata* p. 138

Body to about 9 feet (2.7 m) long.
Body black on back; light gray on belly.
Head rounded; no beak; underslung jaw; lips white.
Dorsal fin to 10 inches (25.4 cm), tall, distinctly back curved.
Distribution tropical (not yet reported in western North Atlantic).

Many-toothed blackfish
Peponocephala electra
p. 142

Body to about 11 feet (3.4 m) long.
Body dark steel gray on back; lighter gray on sides; pinkish to white on belly (older animals speckled on belly).
Head blunt; jaw underslung; false gills or bracket marks on side of head.
Dorsal fin small; located in last one-third of body.
Has not been reported to ride bow waves.
Distribution in tropical and temperate waters.

Pygmy sperm whale
Kogia breviceps
p. 144

Body to about 9 feet (2.7 m) long.
Body dark steel gray on back; lighter gray on sides; pinkish to white on belly.
Head blunt; jaw underslung; false gills or bracket marks on side of head.
Body has two small creases on throat.
Dorsal fin like that of Atlantic bottlenosed dolphin; located near midpoint of back.
Has not been reported to ride bow waves.
Distribution poorly known; at least from Georgia to the tropical seas.

Dwarf sperm whale
Kogia simus
p. 148

Body to 5 feet (1.5 m) long.
Body dark brown above and white below; transition zone on sides often speckled or streaked; ventral white extends high onto side in front of dorsal fin.
Head rounded; beak small and indistinct.
Dorsal fin short and triangular.
Distribution in shallow waters from at least Delaware north; generally found inshore; often in bays, river mouths and inlets.
Does not approach boats.

Harbor porpoise
Phocoena phocoena
p. 150

BLUE WHALE (B)[9]

Balaenoptera musculus (Linnaeus 1758)

Other Common Names

Sulphur-bottom.

Description

Blue whales are the largest living mammals. Though reports of maximum length and weight vary from one account to another, Antarctic blue whales are known to have reached lengths to 100 feet (30.5 m) and weights of over 150 tons (136,363 kg)[10] before stocks were severely depleted by whaling operations. North Atlantic blue whales may be expected to reach lengths of 80-85 feet (24.4-25.9 m). In all known populations of blue whales, females are slightly larger than males of the same age.

Viewed from above, the blue whale's rostrum is broad, flat, and nearly U-shaped (actually shaped like a Gothic arch, slightly flattened on the tip), with a single ridge extending from the raised area just in front of the blowholes towards but not quite reaching the tip of the snout.

The dorsal fin is extremely small [to only 13 inches (33 cm)] and variable in shape from nearly triangular to moderately falcate. In all cases, it is located so far back on the animal's tail stock that it is seldom visible until the animal is about to begin a dive.

Blue whales are light bluish gray overall, mottled with gray or grayish white. Some animals may have yellowish or mustard coloration, primarily on the belly, the result of the accumulation of diatoms during long stays in the cooler waters to the north. The undersides of the flippers are light grayish blue to white.

The baleen plates are all black.

Natural History Notes

The blow or "spout" is tall, to perhaps 30 feet (9.1 m), slender, vertical, and not bushy, as is the blow of humpback whales, for instance.

Although the blowing and diving patterns of blue whales may vary, depending on the speed of movement and the activity of the whale when it is encountered, they may be generally described as follows: If the animal is moving slowly, the blowhole and part of the head may still be visible when the dorsal fin breaks the surface, and the animal may settle quietly into the water without exposing the last portion of the tail stock or the tail flukes. If the animal is moving more quickly, however, or is about to begin a long dive, the blowhole disappears below the surface, a broad expanse of the back is exposed and disappears, and the dorsal fin emerges briefly just before the animal lifts its tail stock and flukes slightly above the surface before slipping out of sight. In this species it can be generally stated that the maximum height of back in the area of the dorsal fin which is exposed above the surface as the animal sounds is approximately four times the height of the dorsal fin itself. The exposure of the tail flukes is unlike that of the humpback whale (Fig. 39), the right whale (Fig. 50), or the sperm whale (Fig. 57) in that when beginning a long dive all these other species raise the flukes high out of the water and usually descend at a steep angle. Blue whales lift the flukes only slightly, if at all.

Blue whales are relatively shallow feeders, feeding as they do almost exclusively on "krill" (small shrimplike crustaceans), most of which are distributed in the surface 330 feet (100 m). Blue whales usually occur singly or in pairs.

May Be Confused With

At sea, blue whales may be confused with fin whales (p. 26) and though the two are sometimes difficult to distinguish from a distance, the following key differences permit identification at close range:

Blue Whale	**Fin Whale**
COLORATION	
Mottled bluish gray above and below.	Gray above, white below; frequently grayish-white chevron behind head, right lower lip white.
BALEEN	
All black.	Bluish gray with yellowish-white strips; front fifth to third of baleen on right side all white.
HEAD	
Broad and nearly U-shaped; all dark.	Narrower, more V-shaped; right lower lip white.
DORSAL FIN	
To 13 inches (33 cm); triangular to moderately falcate; in last third of back; visible well after blow.	To 24 inches (61 cm); falcate; located slightly more than a third forward from tail flukes; usually visible shortly after blow.
SURFACING AND PREPARING TO DIVE	
Often shows head and blowholes; broad expanse of back and much later, dorsal fin.	Usually rolls higher out of water, particularly on long dive; dorsal fin visible shortly after blow.

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[9] The letter in parentheses indicates whether the species is a baleen (B) or a toothed (T) whale.

[10] The largest measured specimen was "just over" 100 feet (30.5 m); the largest specimen weighed, the 150-ton individual noted above, was 89 feet (27.1 m) long.

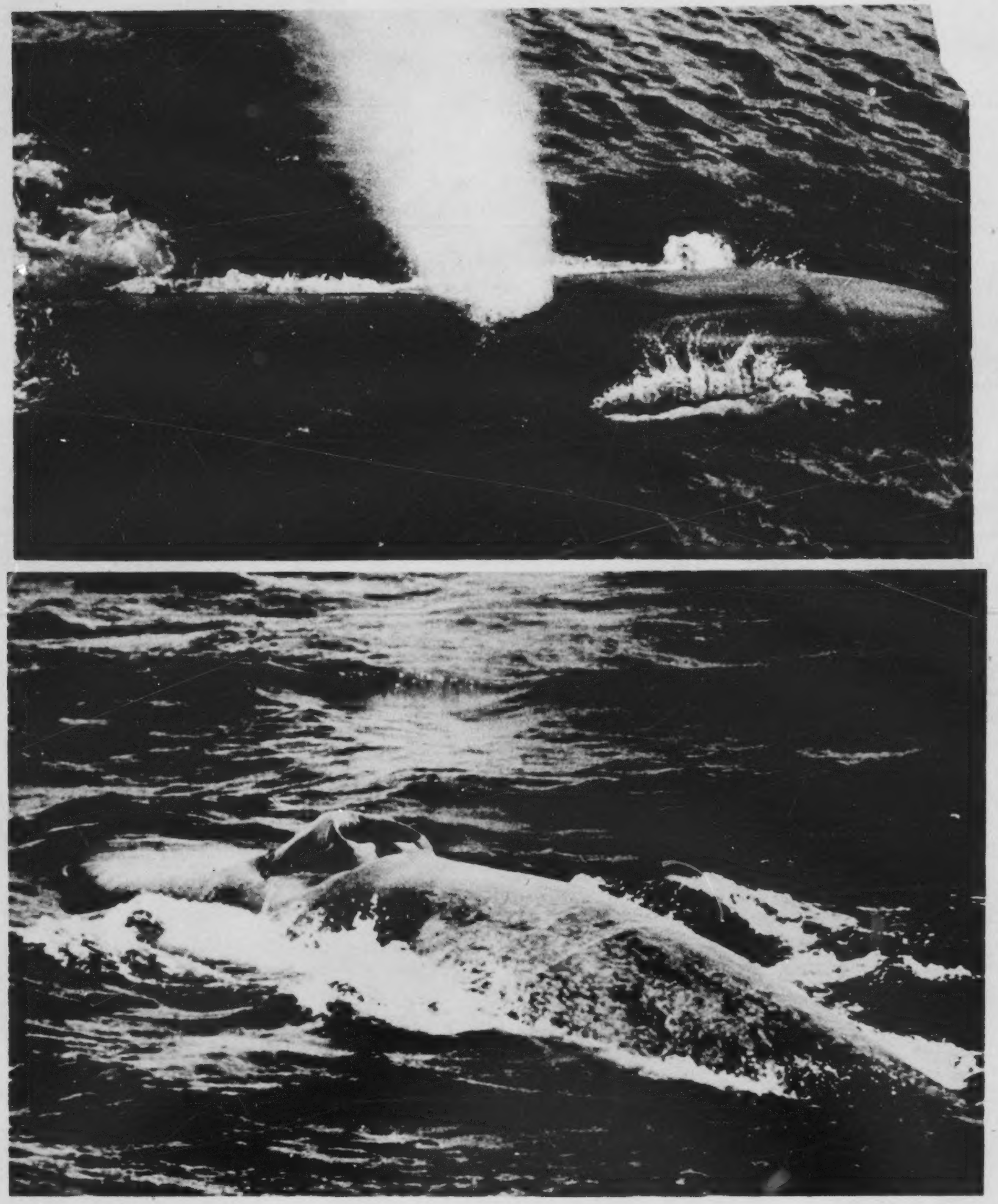


Figure 9.—Closeup views of swimming blue whales off British Columbia (top) and Baja California (bottom). In both photos note the broad rounded appearance of the head and the single, prominent central head ridge. In the animal on the top note also the black baleen plates, barely visible at the front of the slightly open mouth. In the animal on the bottom note the pattern of light grayish-white mottling along the back and the raised areas around the blowholes. These features clearly mark these animals as blue whales. (*Photos by R. M. Gilmore* [*top*] *and K. C. Balcomb* [*bottom*].)

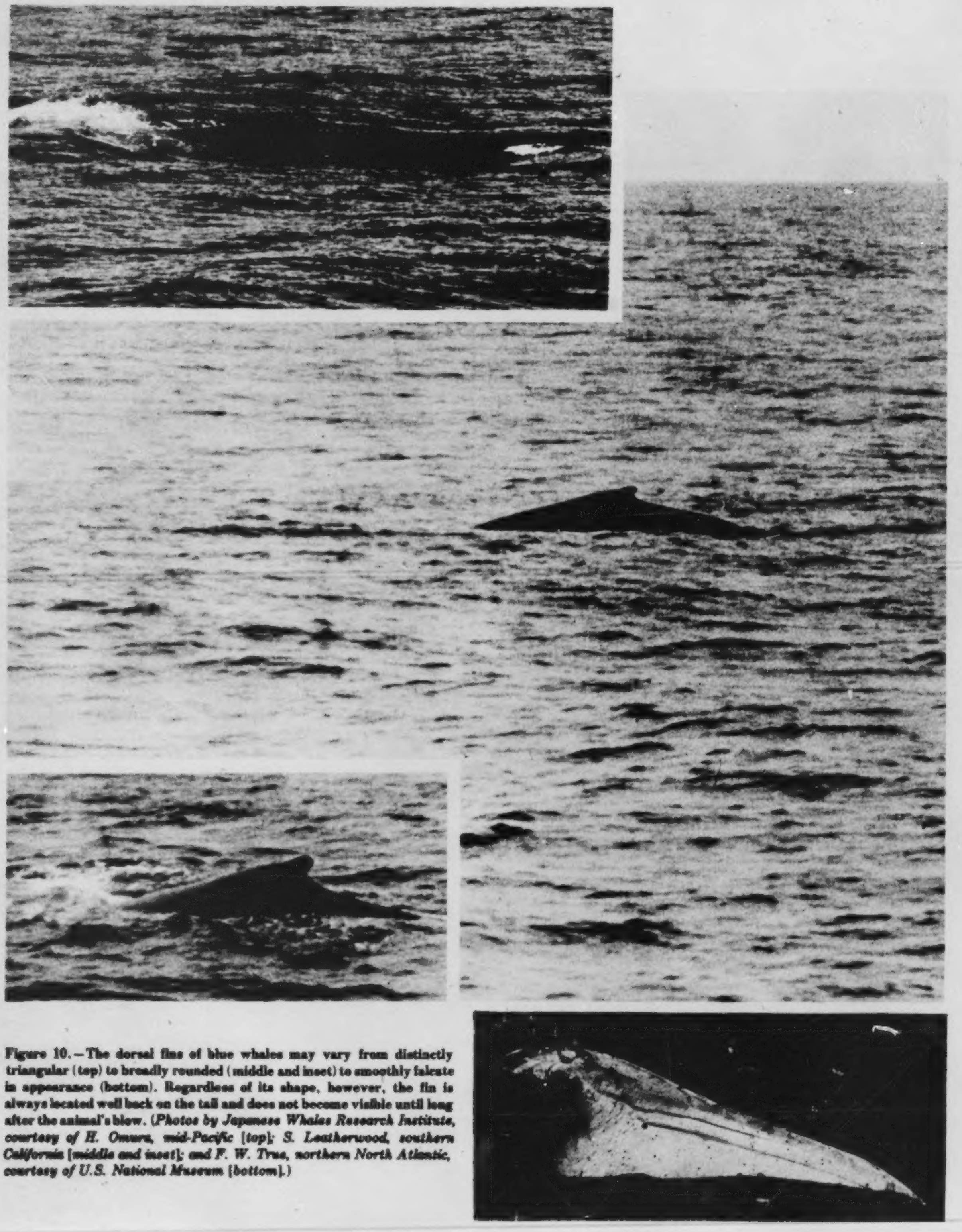


Figure 10.—The dorsal fins of blue whales may vary from distinctly triangular (top) to broadly rounded (middle and inset) to smoothly falcate in appearance (bottom). Regardless of its shape, however, the fin is always located well back on the tail and does not become visible until long after the animal's blow. (*Photos by Japanese Whales Research Institute, courtesy of H. Omura, mid-Pacific* [*top*]; *S. Leatherwood, southern California* [*middle and inset*]; *and F. W. True, northern North Atlantic, courtesy of U.S. National Museum* [*bottom*].)

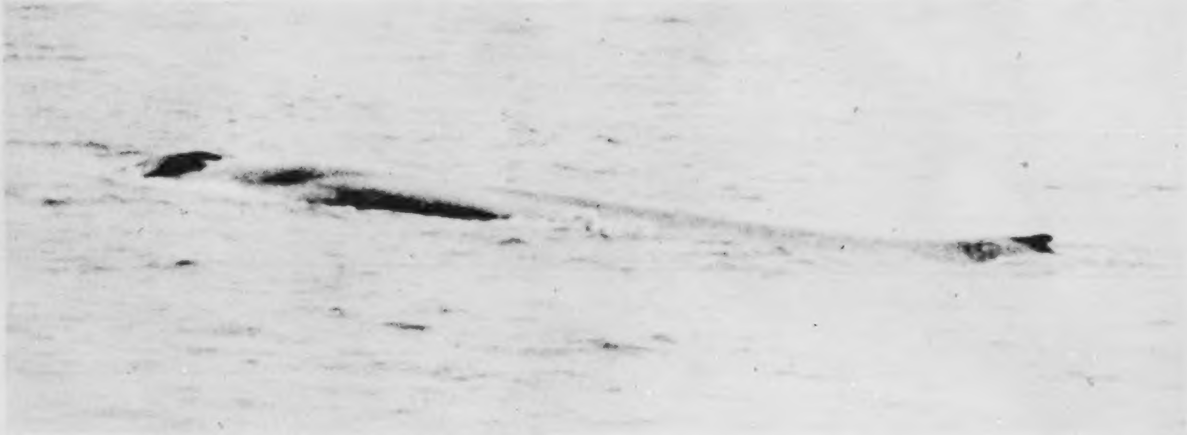


Figure 11. – A blue whale swimming leisurely at the surface off San Clemente Island, Calif. Note that the blowholes, marked by the raised areas on the top of the head, are still exposed after the dorsal fin has become visible. Note also the very small size and the shape of the dorsal fin and its position well back towards the tail. (*Photo by S. Leatherwood.*)

DIVING

Dives for 10-20 min; surfaces and blows 8-15 times, making a series of 12- to 15-s dives between blows, then disappears again; sometimes raises flukes slightly on last dive; on sounding, the maximum height of back in the area of dorsal fin which is exposed is approximately 4 times the height of the dorsal fin.	Dives 5-15 min (most often 6-7); surfaces steeply for 3-7 blows then dives rather steeply again; does not show flukes on dive; on sounding, the maximum height of back in the area of dorsal fin which is exposed is approximately 2 times the height of the dorsal fin.

GROUPING

Usually found singly or in pairs.	Occasionally found singly or in pairs, more often found in pods of six or seven individuals; many pods, consisting of as many as 50 animals, may be found in small area.

See also comparison of fin whale and sei whale (p. 26).

Distribution

Though blue whales have been reported from the pack ice to Cristobal Harbor, Panama Canal Zone, their normal range in the western North Atlantic is more limited. In spring and summer months (about April through at least August) they can be expected in the northern portion of their range, at least as far north as the Arctic Circle, feeding on the krill abundant in those waters. A small portion of the population may venture north, beyond the Circle. In fall and winter the population moves south, presumably into temperate and perhaps to tropical waters. Reliable records include animals from observations off Long Island and Ocean City, Md. Though southern limits of the species are poorly known, there are no records from Florida or the West Indies and no verified records from the Gulf of Mexico.

Summaries of blue whale distribution based on records when the species was more numerous indicate that they were found during spring and summer months in some abundance on the Nova Scotian Banks, the St. Lawrence Gulf and estuary, the Strait of Belle Isle, Grand Bank, and in the waters off the coasts of Iceland, southern Greenland, and the Davis Straits and Baffin Bay. (Some individuals have entered the Hudson Strait but not apparently Hudson Bay itself.)

Historically, a few animals apparently appeared off the coast of southeastern Canada as early as February. It was speculated that from there a portion of the population underwent a migration from the Strait of Belle Isle north through the Davis Straits to the waters off western Greenland. Some individuals entered the Gulf of St. Lawrence after the ice was clear and remained behind until as late as November. In the fall months, certainly by November, the northern portion of the population had begun retreating to the south in front of the advancing ice. The remainder apparently also underwent this migration as well, since blue whales have historically been nearly absent from Canadian waters during midwinter.

Many of the migrating individuals were assumed to continue south to temperate and, less frequently, to tropical water where they calved. It should be emphasized that though all of the southward and the subsequent northward migrations were presumed to be along pelagic routes, details were poorly documented.

Blue whales have been reported in both shallow inshore and deep oceanic zones.

Despite considerable attention in the popular literature to the plight of the blue whale populations and frequent statements that they are near extinction, blue whale stocks in the western North Atlantic appear more abundant than has been usually reported. While present stocks are far short of previous population sizes, which may have exceeded 200,000 individuals worldwide, they should be sufficiently large for

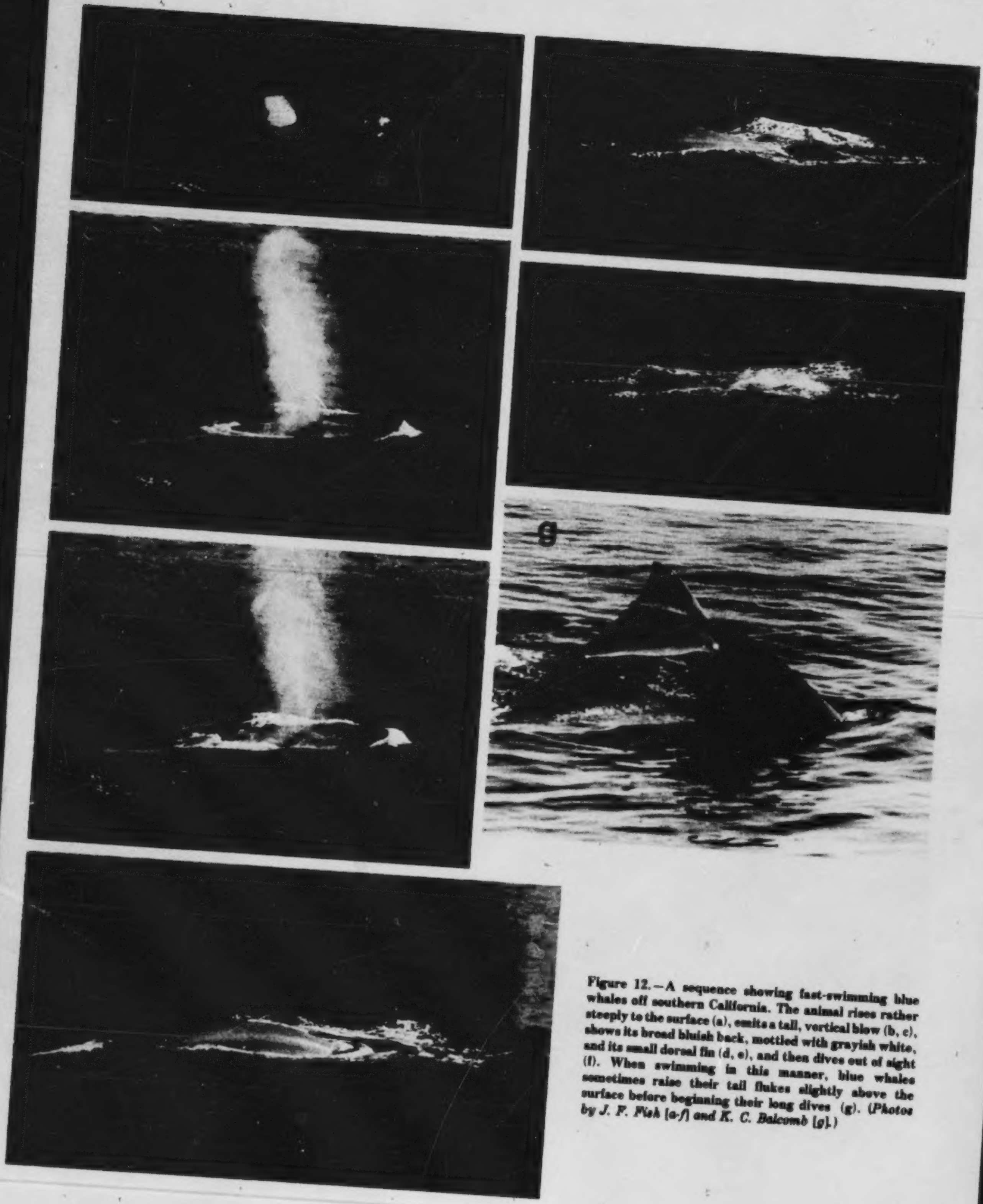


Figure 12.—A sequence showing fast-swimming blue whales off southern California. The animal rises rather steeply to the surface (a), emits a tall, vertical blow (b, c), shows its broad bluish back, mottled with grayish white, and its small dorsal fin (d, e), and then dives out of sight (f). When swimming in this manner, blue whales sometimes raise their tail flukes slightly above the surface before beginning their long dives (g). (*Photos by J. F. Fish [a-f] and K. C. Balcomb [g].*)

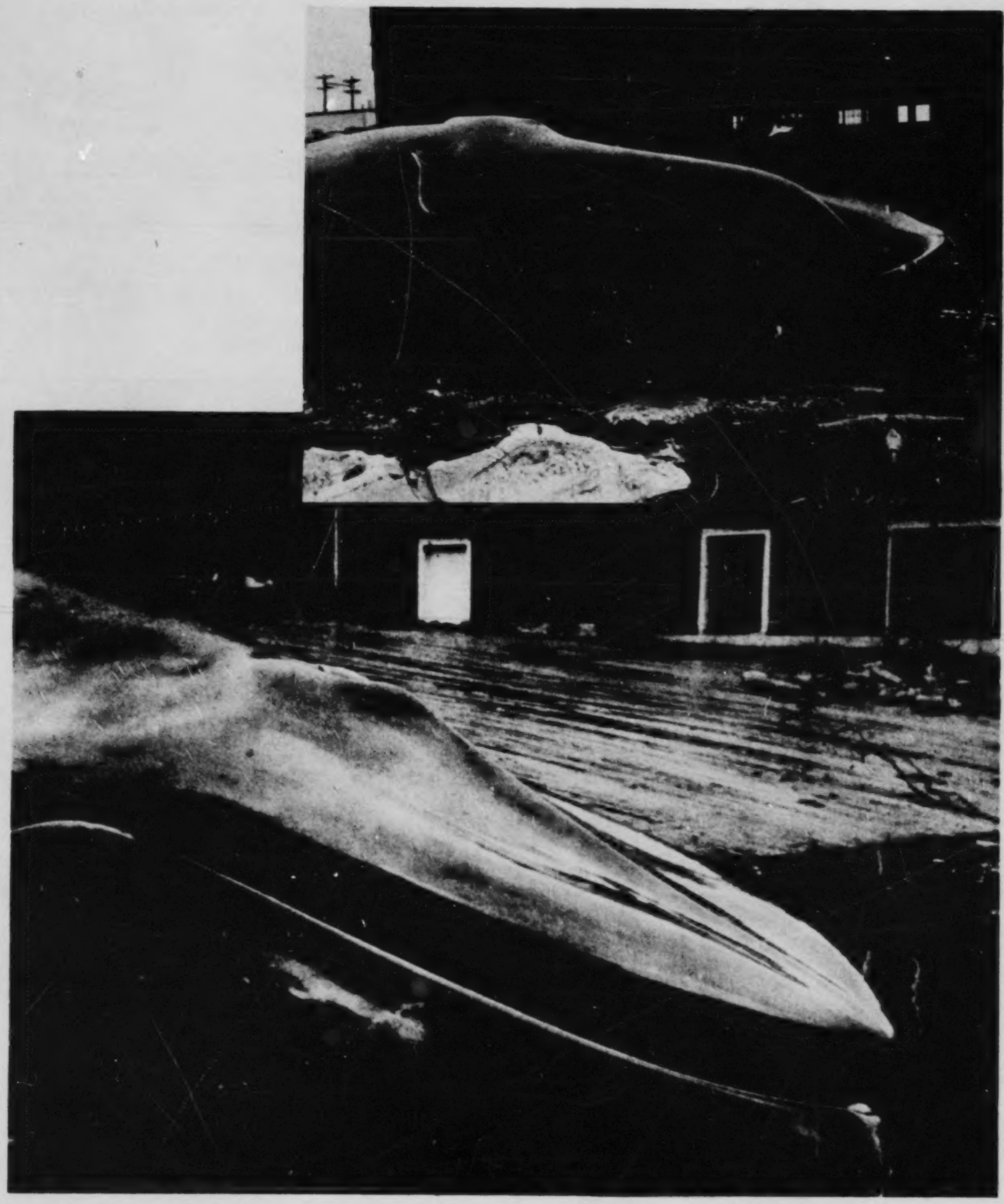


Figure 13.—Two views of blue whales on the ramps of whaling stations in Japan (top) and at Hermitage Bay, Newfoundland (bottom). Note the broad rounded appearance of the head, the single central head ridge, and the dark bluish-gray coloration, interrupted only by mottlings of grayish white. In the animal on the bottom note the all-black baleen plates, which are very broad relative to their length. (*Photos by Japanese Whales Research Institute, courtesy of H. Omura* [top]; *and F. W. True, courtesy of U.S. National Museum* [bottom].)

the species to continue their increase, barring renewed exploitation.

Stranded Specimens

Stranded blue whales can be readily identified by 1) the large body size (to 85 feet [25.9 m]); 2) the broad flat head; 3) the all-black baleen plates (270-395 in number), which are usually barely more than twice as long as they are wide; and 4) the 55-88 ventral grooves extending to the navel or beyond (Table 2).

Depending on the state of decay and the position of the stranded specimen, any of the body characteristics described for living animals may also be used to positively identify the specimen.

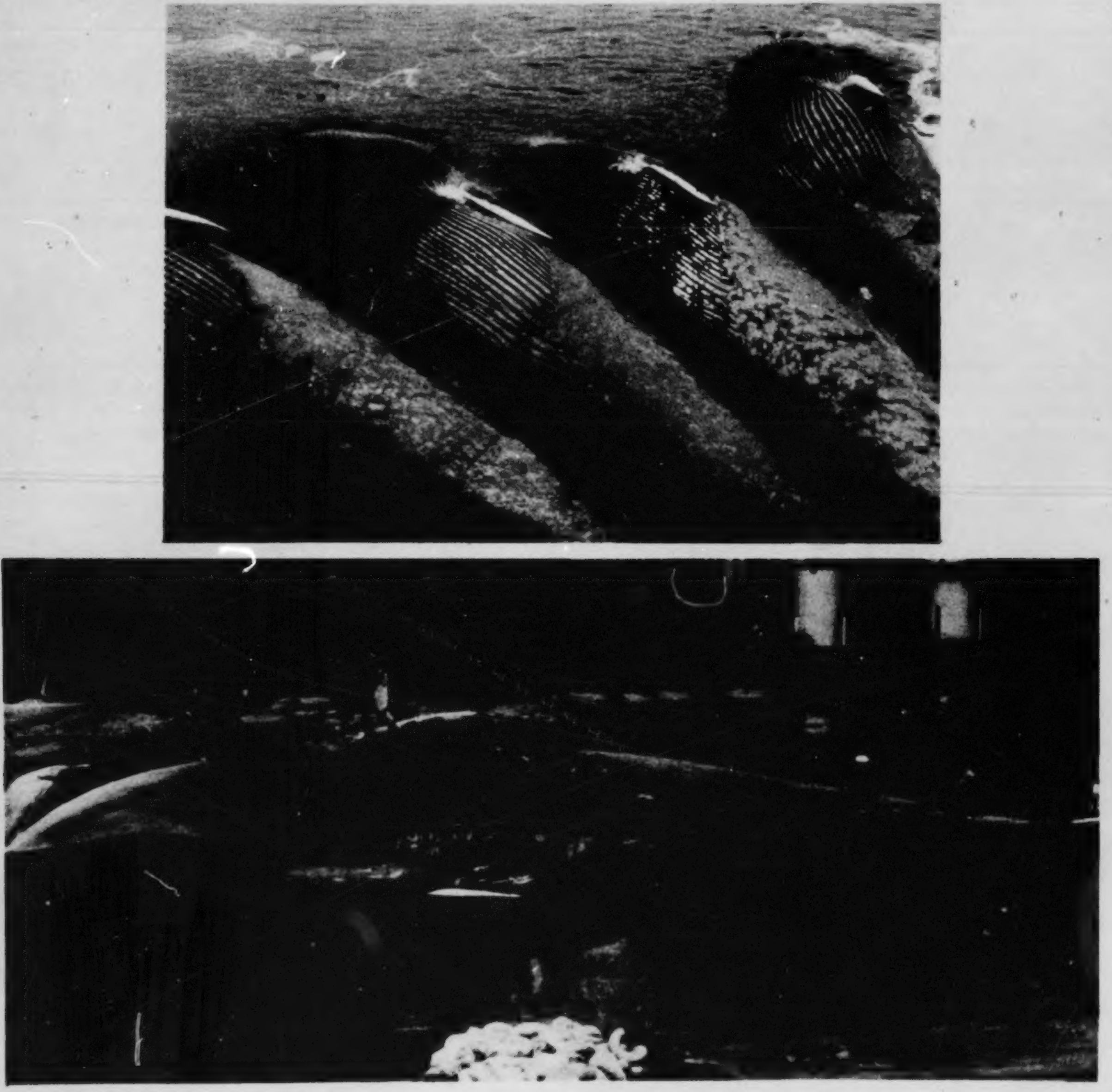


Figure 14.—Dead blue whales, harpooned and afloat off the stern of a factory ship in the Antarctic (top), and on the deck of a whaling station in western Canada (bottom). In both, note the numerous ventral grooves (from 55 to 85 or more) extending to the region of the navel and sometimes beyond, and the light coloration of the undersides of the flippers. Even though grooves are often present above the flippers, and occasionally even on the side of the head, counts of ventral grooves are usually made between the flippers. (*Photos by Japanese Whales Research Institute, courtesy of H. Omura* [*top*]; *and G. C. Pike, courtesy of I. MacAskie* [*bottom*].)

FIN WHALE (B)

Balaenoptera physalus (Linnaeus 1758)

Other Common Names

Finback whale, finner, razorback, common rorqual.

Description

Fin whales have been reported to reach 79 feet (24 m). Females are slightly larger than males of the same age.

The back is distinctly ridged towards the tail, prompting the common name "razorback" whale.

The rostrum is narrower and more V-shaped than that of the blue whale and has the same sort of single distinctive head ridge. The top of the head is flat, though slightly less than that of the blue whale.

The dorsal fin is up to 24 inches (61 cm) tall; angled less than 40° on the forward margin, located slightly more than one-third forward from the tail, and appears on the surface shortly after the blow.

All individuals are dark gray to brownish black on the back and sides with none of the mottling present on blue whales and are rarely as heavily scarred as sei whales. Along the back, just behind the head, there is a grayish-white chevron, with the apex along the midline of the back and the arms of the chevron oriented posteriorly, which is sometimes distinctive and may be visible as the animals surface to breathe. The undersides, including the undersides of the flukes and flippers, are white. On the head, the dark coloration is markedly asymmetrical, reaching farther down on the left than on the right side. The right lower lip, including the mouth cavity, and the right front baleen (approximately one-fifth to one-third) are yellowish white. Occasionally the right upper lip is also white. The remainder of the plates on the right side and all those on the left side are striped with alternate bands of yellowish white and bluish gray. The fringes of the plates are brownish gray to grayish white.

Natural History Notes

Fin whales are one of the most common baleen whale species in the world and constitute a major portion of the whaling catch. They are reportedly one of the fastest of the big whales (sei whales may be slightly faster) possibly reaching burst speeds in excess of 20 knots, and were not an important commercial species until the comparatively recent development of fast catcher boats and the depletion of blue whale stocks.

A fin whale's blow can be from 15 to 20 feet (4.6 to 6.1 m) tall and has been described as an inverted cone or an elongated ellipse.

Fin whales dive to at least 755 feet (230.1 m). This depth is probably deeper than that of either blue or sei whales, a factor usually reflected in differences among the surfacing, blowing, and diving characteristics of these three species. When they are moving leisurely at the surface, fin whales expose the dorsal fin shortly after the appearance of the blowholes, slightly later than that of the sei whales. When they are surfacing from a deeper dive, however, they surface at a steeper angle, blow, submerge the blowholes, and then arch the back and dorsal fin high into the air before beginning another long dive. In this species it can be generally stated that the maximum amount of the back in the area of the dorsal fin which is exposed above the surface as the animal sounds is approximately 2 times the height of the dorsal fin. Fin whales do not show their tail flukes when beginning a dive.

Unlike blue or sei whales, fin whales do breach on occasion. When they do leap clear of the water, fin whales usually reenter with a resounding splash, like that made by humpback and right whales and not smoothly, head first, as minke whales often do.

Fin whales are sometimes found singly or in pairs but more often occur in pods of six or seven individuals and many pods consisting of as many as 50 animals may be concentrated in a small area.

Fin whales calve and breed in winter, mostly in temperate waters.

Atlantic fin whales eat a wide variety of foods, including krill, capelin, squid, herring, and lanternfish.

May Be Confused With

Fin whales may be confused with blue whales, sei whales, and, in the southernmost portion of their range, with Bryde's whales. They may be distinguished from the blue whales by differences in overall coloration, coloration and shape of the head, and the size, position, and time of appearance of the dorsal fin at the surface (see p. 19). After close examination they may be distinguished from Bryde's whales by the presence of three ridges along the head (of the Bryde's whale) and by the smaller, more sharply pointed falcate dorsal fin of the Bryde's whale (see Fig. 31). They may be distinguished from sei whales in the following similar ways:

Fin Whale	**Sei Whale**
DORSAL FIN	
Slightly falcate, forms angle of less than 40° with back slightly more than one-third forward from tail.	Sharply pointed and falcate; forms angle of greater than 40° with back well more than one-third forward from tail.
SURFACING BEHAVIOR	
Usually rise obliquely so top of head breaks surface first; after blowing, animal arches its back and rolls forward exposing the dorsal fin on the long dive; on sounding, the maximum amount of back in the area of the dorsal fin which is exposed is approximately 2 times the height of dorsal fin.	Primarily skimmer feeders; usually rise to surface at shallow angle so that dorsal fin and head are visible almost simultaneously; when starting the long dive does not usually arch the back as much as the fin whale; on sounding, the maximum amount of back in the area of the dorsal fin which is exposed is approximately 1 times the height of the dorsal fin.

BLOW

Tall (to 20 feet [6.1 m]); inverted cone (point down) or elongated ellipse.	Similar shape but smaller—rarely taller than 10-15 feet (3.1-4.6 m).

DIVING

Dive for 5-15 (usually 6-7) min; blow 3-7 times or more at intervals of up to several minutes, then dive again.	Dive for 3-10 min; usually blow at even intervals over long periods of time; often visible just below the surface, even on longer dives.

COLOR OF UNDERSIDES

White higher up on right than on left side.	Mostly gray; irregular whitish area on belly.

COLOR OF LOWER LIP

White on right, gray on left.	Gray.

BALEEN PLATES

Right one-fifth to one-third in front white; all others alternate bands of yellowish white and bluish gray; bristles grayish white.	Ash black with a blue tinge and fine grayish bristles.

Distribution

Fin whales are probably the most numerous and widely distributed large whale species in the western North Atlantic.

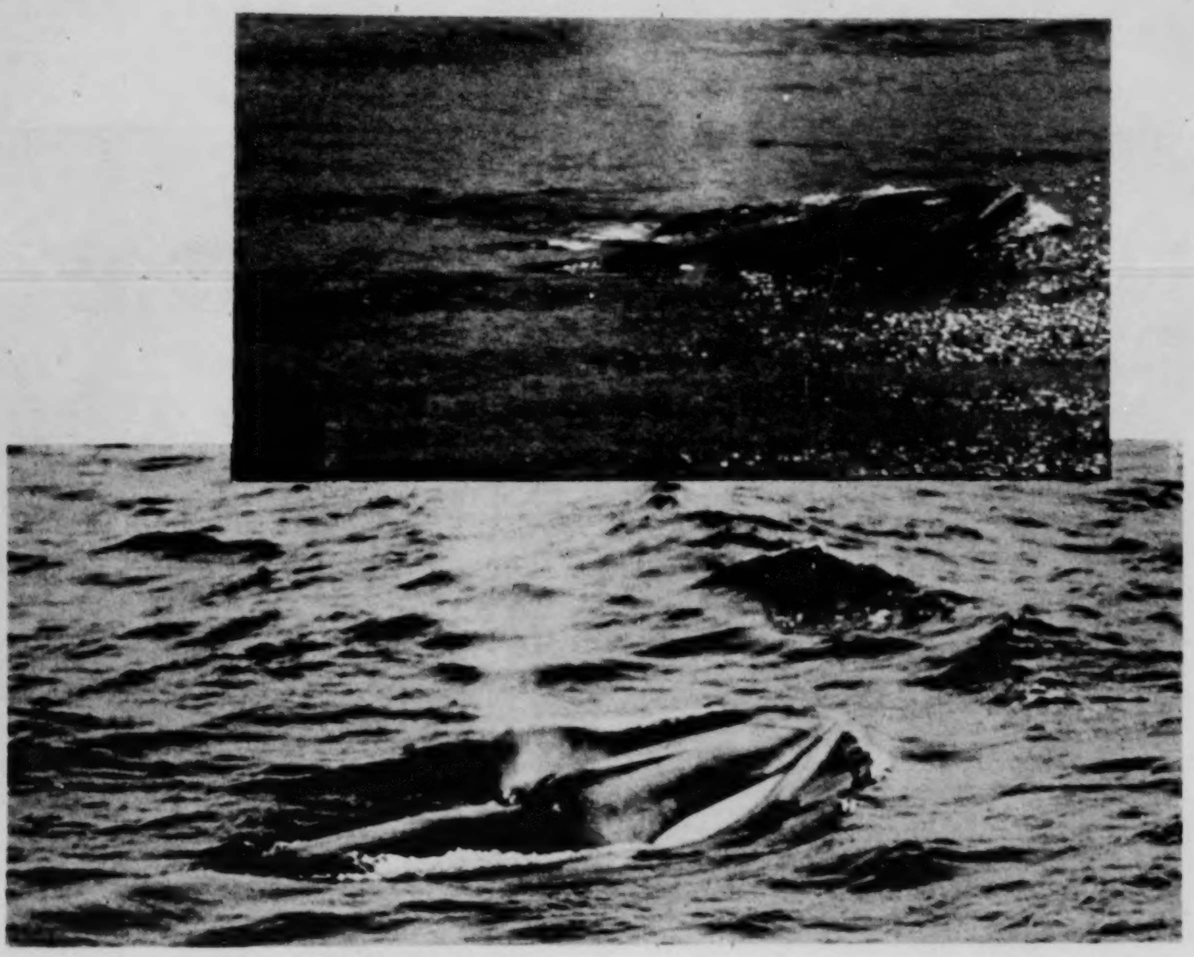


Figure 15.—The heads of fin whales surfacing to breathe off Japan and in the northern North Atlantic (inset). When they can be approached from the right side, fin whales can be positively distinguished from the other large balaenopterine species by the white coloration of the right lower lip and the flat, narrow head. Note also the single central head ridge. (*Photos by Japanese Whales Research Institute, courtesy of H. Omura, and K. C. Balcomb [inset].*)

Figure 16. – A small group of fin whales off British Columbia. Fin whales may be found in groups of up to six or seven individuals and these groups may congregate in feeding grounds. (*Photo by G. C. Pike, courtesy of I. MacAskie.*)

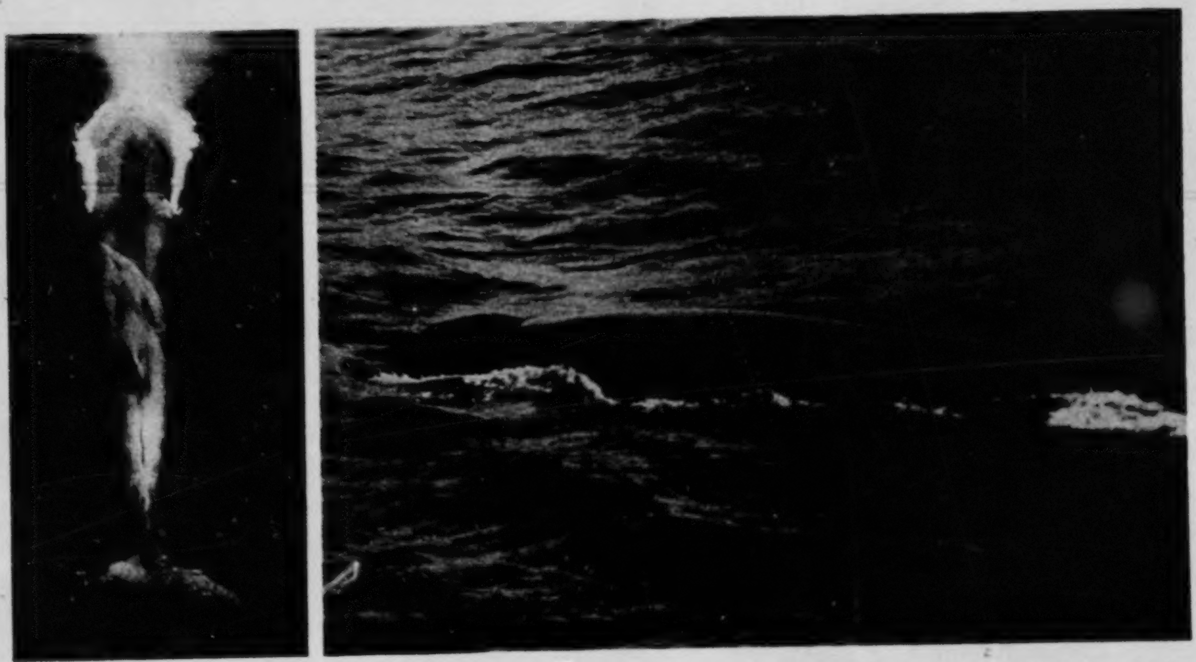


Figure 17. – The back of a harpooned fin whale in the eastern North Pacific (left) and in the North Atlantic (right). In both note the light grayish-white chevrons just behind the head. These chevrons are not usually very distinctive in North Atlantic fin whales. In the animal in the left photo note also the prominent ridge along the back behind the dorsal fin – a characteristic which prompted the common name "razorback." (*Photos courtesy of* Los Angeles Examiner [*left*] and *K. C. Balcomb* [*right*].)

Figure 19. – As they begin a long dive, fin whales frequently arch the tail stock high into the air, exposing the dorsal fin. Even on a long dive, however, this species is not known to throw its tail flukes high into the air or even to raise them slightly, as blue whales sometimes do when beginning a long dive. (*Photo from off Virginia by J. G. Mead.*)

Fin whales summer from below the latitude of Cape Cod, Mass., north to the Arctic Circle. (They are frequently seen between New York and Bermuda this time of year.) Within this zone they may sometimes be seen very close to shore and appear to be concentrated between shore and the 1,000-fathom curve from at least lat. 41°20′ to 57°00′N. In recent years they have been reported in relatively large numbers in the Gulf of Maine from March through June, off Newfoundland as early as June but increasing to August, and entering Davis Straits and beyond in substantial numbers in midsummer to late summer. There is some evidence that the animals venturing farthest north are the largest individuals of the species. Movements of the population(s) southward have usually begun by October, though some fin whales sometimes remain in the northern seas sufficiently long to become trapped in the ice and killed.

During winter the range of fin whales spreads out from the advancing ice southward, reaching at least to the coast of Florida, into the Gulf of Mexico, and to the Greater Antilles, though fin whales are not at all common in tropical waters. During the winter many fin whales move into offshore waters. Northward migrations probably begin in midspring.

Fin whales may be found in Cape Cod waters all year long.

There may be two or possibly three separate stocks of fin whales in the western North Atlantic, one more northern cold-adapted stock and another more southern stock. The ranges of the two stocks appear to overlap, such that the winter range of the northern stock probably becomes the spring and summer range of the more southern stock. The third stock may consist of an isolated population in the northern Gulf of Mexico.

Stranded Specimens

Stranded fin whales may be most readily identified by 1) the yellowish-white coloration of the right front baleen and the right white lower lip; 2) the numerous baleen plates (262-473 in number); 3) the numerous ventral grooves (56-100 in number) extending to the navel and beyond (Table 2); and 4) the broad, flat sharply pointed head with only a single head ridge.

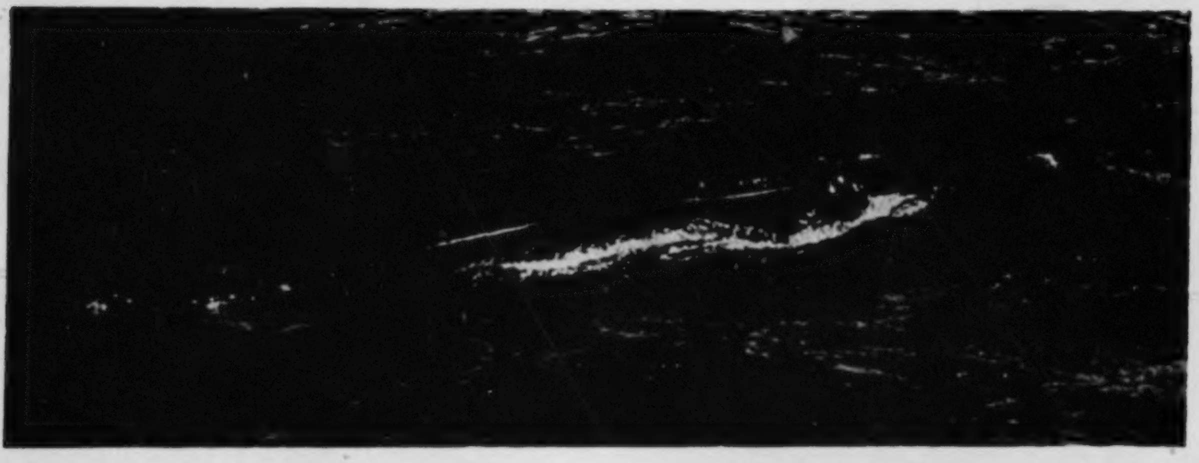
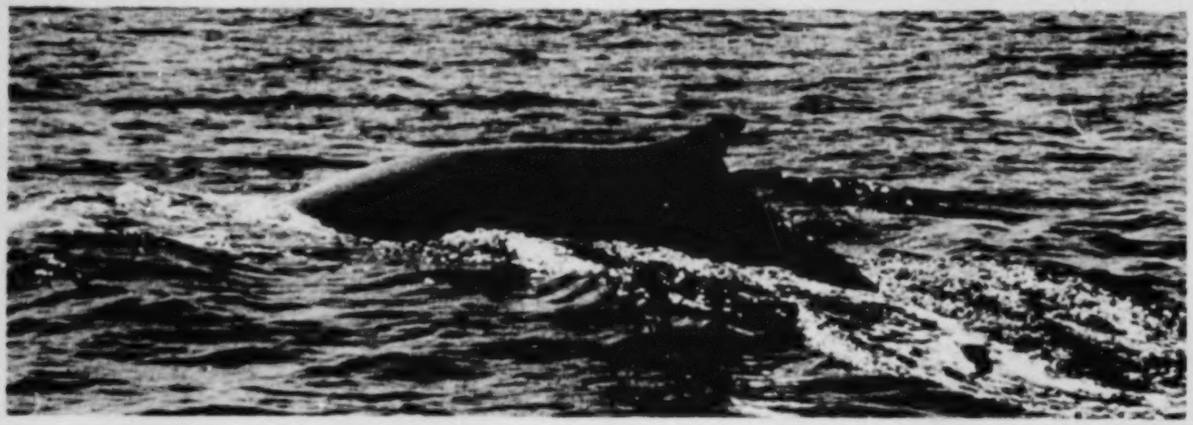


Figure 18.—Surfacing fin whales show the head and blow, then the wheellike silhouette of the back, and then the dorsal fin. Note that in this species the dorsal fin is smaller and located farther back than that of the sei whale and appears on the surface later after the animal's blow. (*Photo from the northern North Atlantic by K. C. Balcomb.*)



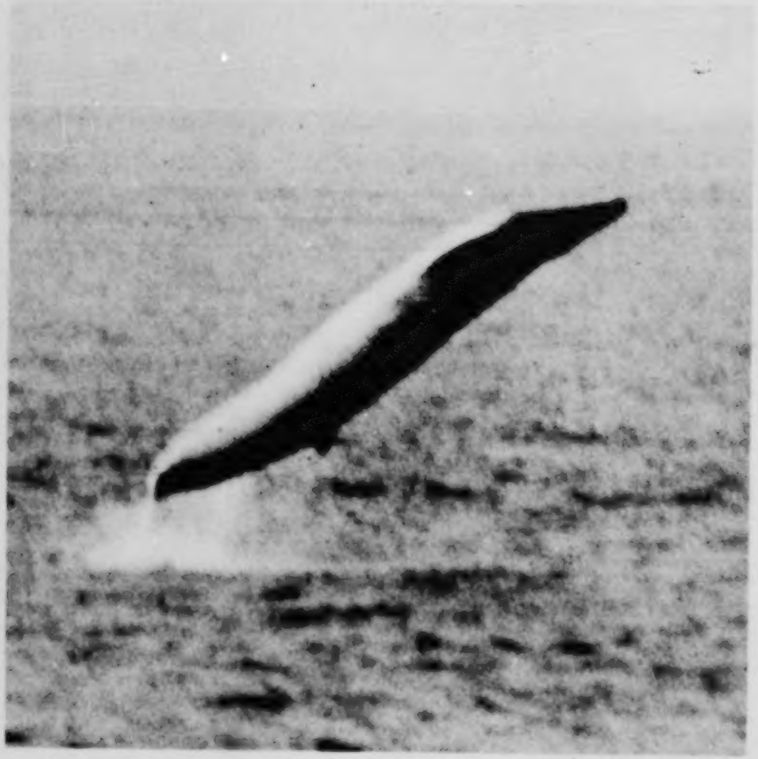


Figure 20.—Probably a fin whale (perhaps a Bryde's whale) breaching in the eastern tropical Pacific. This type of behavior has been described for humpback, minke, and fin whales but is far more common for the first two species. Breaching fin whales often reenter the water with a resounding splash, much like humpback whales, but sometimes smoothly, head first, as minkes sometimes do. (*Photo by K. D. Sexton, courtesy of National Marine Fisheries Service.*)

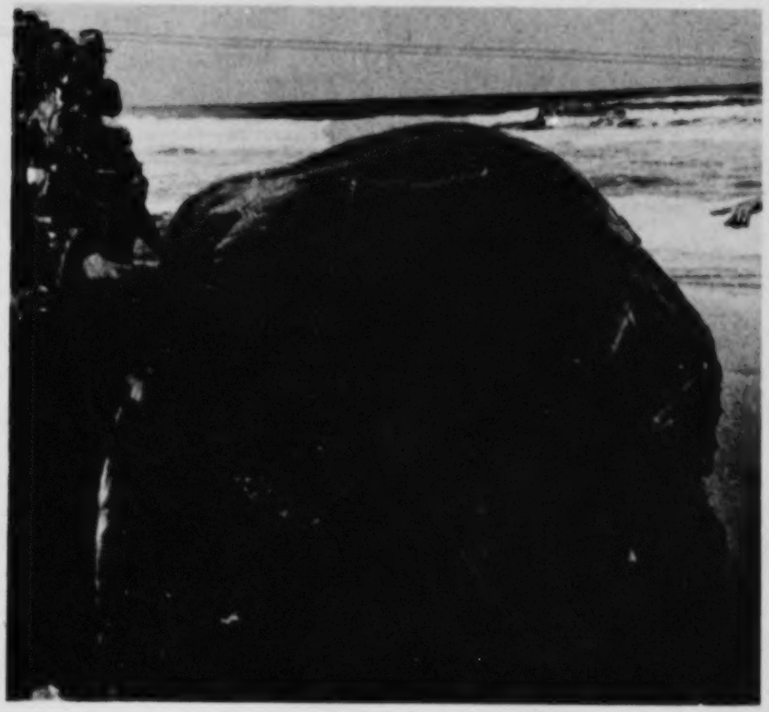


Figure 21.—A head-on view of a fin whale stranded at Ormond Beach, Fla. Note the flat narrow appearance of the head and the single, central head ridge. (*Photo by F. Essapian, courtesy of Marineland of Florida.*)

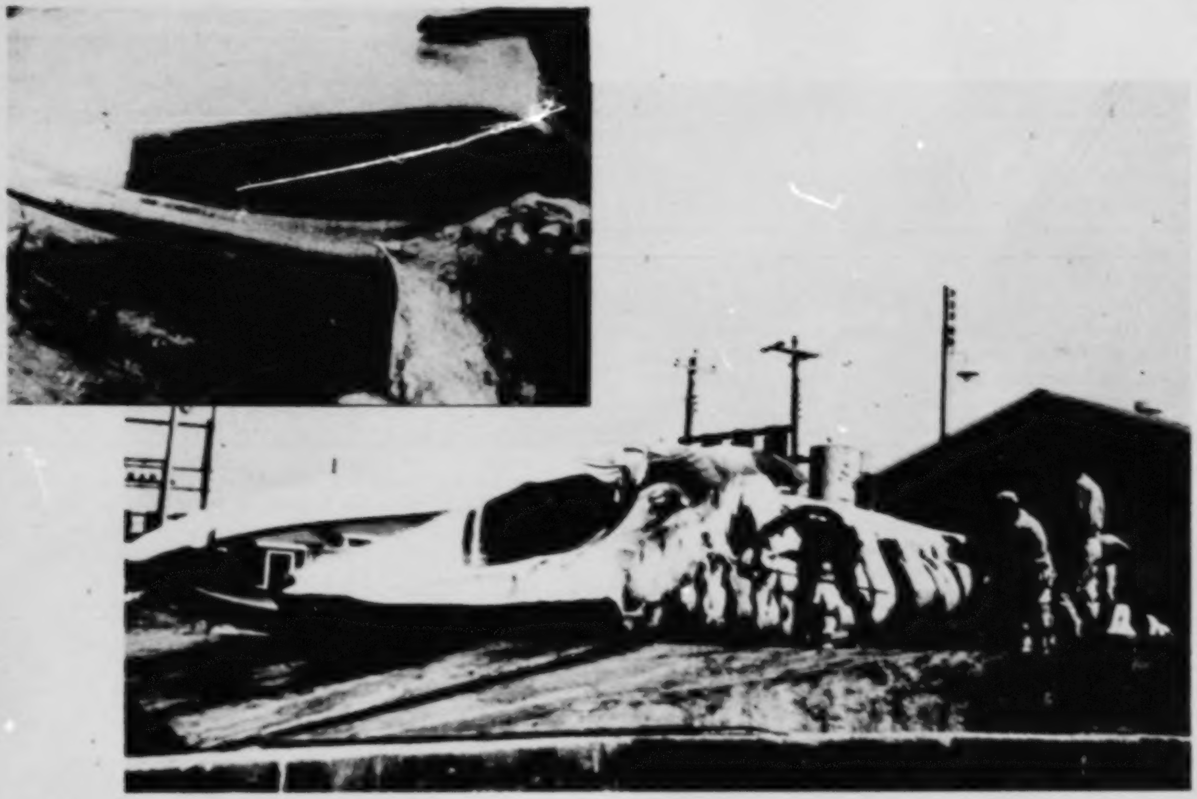


Figure 22. – In this partly flensed fin whale, at Blanford, Nova Scotia, note the white lower lip and the white baleen in the right front. The inset photo shows the right upper jaw of a fin whale with the baleen intact. (*Photos by H. E. Winn, and from the North Pacific by Japanese Whales Research Institute, courtesy of H. Omura* [inset].)

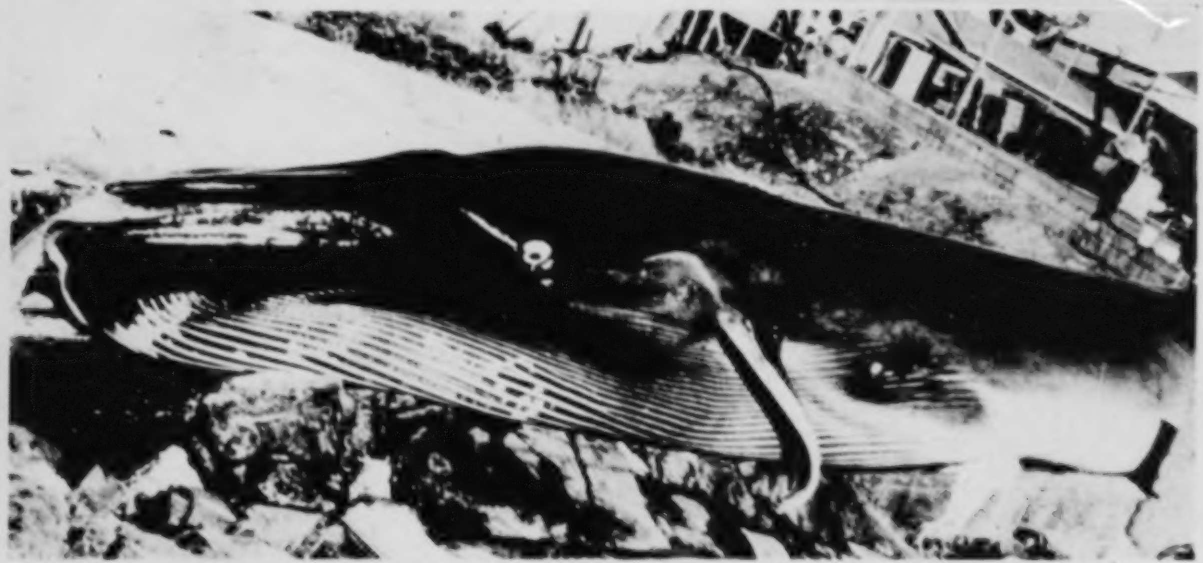


Figure 23. – A fin whale on the ramp of the whaling station also at Blanford, Nova Scotia. Note the ventral grooves, 56 to 100 and extending at least to the navel. (*Photo by L. Rigley.*)

SEI WHALE (B)

Balaenoptera borealis Lesson 1828

Other Common Names

Pollack whale, sardine whale, Rudolphi's rorqual.

Description

Sei (pronounced "say") whales have been reported to reach 62 feet (19 m).

The snout is less acutely pointed than that of the fin whale but when viewed from the side appears slightly arched. In general, the head is intermediate in shape between that of the blue whale and that of the fin whale. The dorsal fin, which is from 10 to 24 inches (25.4 to 61 cm) tall and strongly falcate in adult animals, is located about two-thirds of the way back on the back, farther forward than that of the blue or fin whales. Sei whales are dark steel gray on the back and sides, and on the posterior portion of the ventral surface. The body often has a galvanized appearance due to scars possibly resulting from lamprey bites inflicted during migrations into warmer waters. These scars may be dark gray to almost white in color. On the belly there is a region of grayish white that is confined to the area of the ventral grooves. Neither the flippers nor the tail flukes are white underneath. The right lower lip and the mouth cavity, unlike those of the fin whale, are uniformly gray. The baleen plates are uniformly grayish black with fine grayish-white fringes. (A small number of sei whales have been noted to have a few half-white plates near the front of the mouth, a feature which might result in their confusion with fin whales.)

Natural History Notes

The blow of sei whales is an inverted cone rarely taller than 15 feet (4.6 m).

Sei whales are generally skimmer feeders and do not usually dive very deeply. For that reason they usually surface at a shallower angle than fin whales. The head rarely emerges at a steep angle (except when the whales are chased). Instead, the blowholes and a major portion of the back, including the dorsal fin, become visible almost simultaneously and remain visible for relatively long periods of time. In this species it can be generally stated that the amount of the back in the area of the dorsal fin which is exposed above the surface as the animal sounds is approximately the same height as the dorsal fin. When they begin another dive, sei whales do not arch the tail stock or flukes high. Instead, they normally submerge by slipping quietly below the surface, often remaining in view only a few feet down and leaving a series of tracks or swirls on the surface as they move their tail flukes. When they are feeding in this manner, sei whales may exhibit a highly regular blowing and diving pattern over long periods of time.

Sei whales usually travel in groups of from two to five individuals, though they may concentrate in large numbers on the feeding grounds.

In the northern portion of their range, sei whales feed on copepods. Throughout the remainder of the range, however, their food is more varied and also includes krill and a variety of small schooling fishes. The species derived its common name, in fact, from its frequent occurrence with or near sei fish.

May Be Confused With

The sei whale's smaller size and decidedly taller, more falcate dorsal fin located well more than one-third forward from the tail should prevent confusion with the blue whale. At a distance, however, sei whales are difficult to distinguish from either fin whales or Bryde's whales. The primary clues for distinguishing them from fins are the differences in swimming, blowing, and diving characteristics tabularized in detail on p. 26 and the asymmetrical coloration of the fin whale.

Sei whales may be distinguished from Bryde's whales only upon close examination. The dorsal fin of Bryde's whales is small, to 18 inches (45.7 cm), sharply pointed, and often worn on the rear margin. If close examination is possible, the sei whale will be seen to have only a single head ridge. Bryde's whales have two additional ridges—one on each side of the main ridge. Bryde's whales are primarily fish feeders and their diving behavior more closely resembles that of a fin whale than that of a sei whale. (See p. 37).

Distribution

The distribution and migrations of the sei whale during most of the year are rather poorly known. The species is known to avoid the colder regions near the pack ice and to range from Iceland south to the northeast Venezuelan coast and the northeast and southwest Gulf of Mexico. There are also records from Cuba and the Virgin Islands. Along the northeast United States and eastern Canadian coasts, where most research on sei whales has been conducted, the species migrates from New England through the Blanford, Nova Scotia area in June and July, is found in small numbers off eastern Newfoundland in August and September (abundant in Placentia Bay, Newfoundland in August), and continues northward to the Davis Straits in September and October. An offshore stock may be found year-round in the Labrador Sea. The summer range (May to September or October) extends from New England to southern Arctic waters. Though some individuals remain behind through November, the southward movement of the bulk of the population presumably begins in October. In general, sei whales do not venture as far north as fin whales but may have a greater tendency to enter tropical waters.

Stranded Specimens

Stranded sei whales are most likely to be confused with fin whales or Bryde's whales. The three head ridges of the Bryde's whale (sei whales have only one) assist in distinguishing sei whales from Bryde's whales. They may be distinguished from fin whales and all other rorquals by the following characteristics: 1) The color of the baleen plates—uniformly ash black with a blue tinge and fine white bristles

(Table 2). 2) The density of bristles on the plates—sei whales have from 35 to 60 baleen fringes per centimeter; all other rorquals have far fewer (less than 35). 3) The relative lengths of the ventral grooves—the grooves of sei whales end well before the navel; those of blue, fin, and Bryde's whales extend at least to the navel. 4) The relatively small numbers of ventral grooves (38-56)—both blue and fin whales have more; Bryde's whales have approximately the same number.

If the animal is not in an advanced state of decomposition, the region of white coloration of the belly may also be visible.

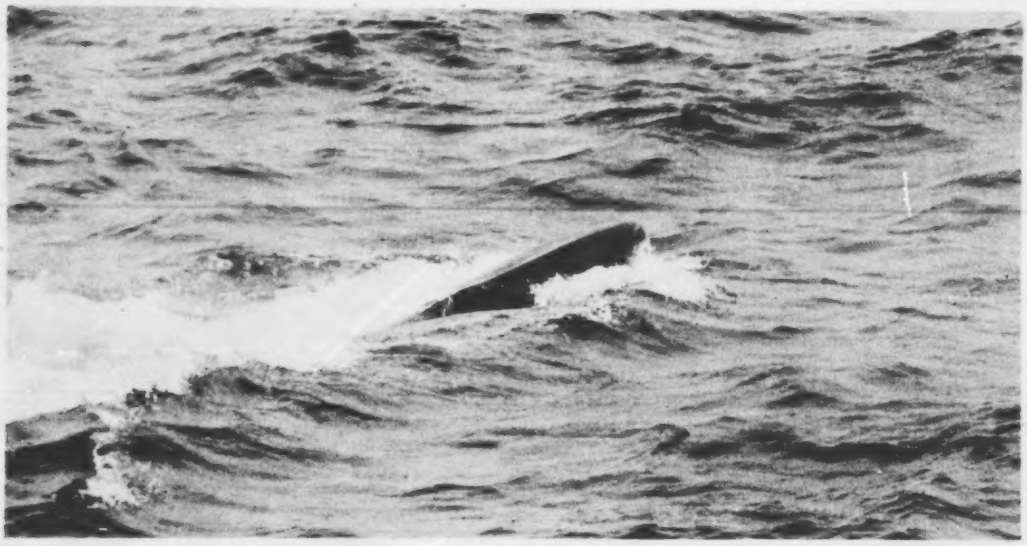


Figure 24.—The head of a sei whale is intermediate in shape between that of the blue whale and that of the fin whale. When viewed from the side it is slightly arched. Note the single central head ridge, from just in front of the blowholes to near the tip of the snout. Bryde's whales, with which sei whales are most likely to be confused in the tropical and subtropical portions of their range, have two auxiliary ridges, one on each side of the top of the head, in addition to this main central ridge. (*Photo from the North Pacific by Japanese Whales Research Institute, courtesy of H. Omura.*)

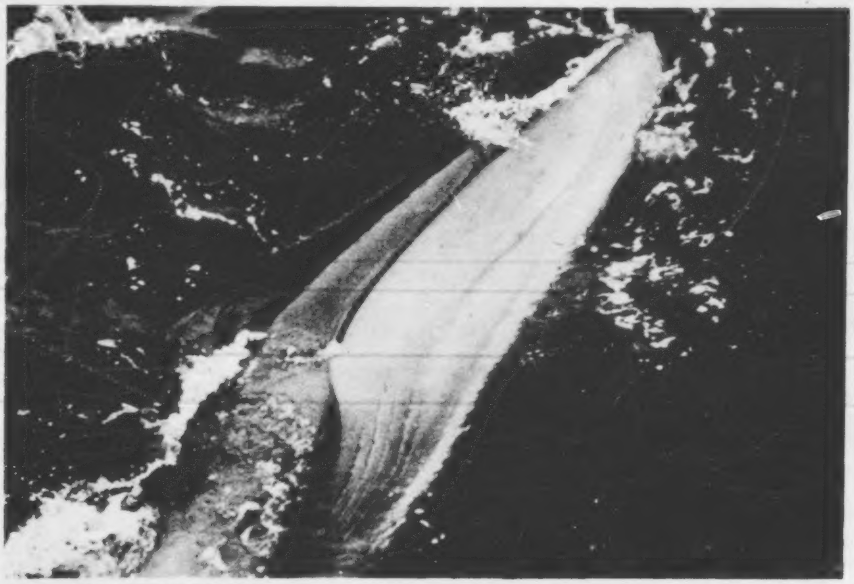


Figure 25.—Sei whales are dark gray on the right lower lip. They can be distinguished from fin whales, which have a white right lower lip, by approaching them from the right side. (*Photo from the North Pacific by Japanese Whales Research Institute, courtesy of H. Omura.*)

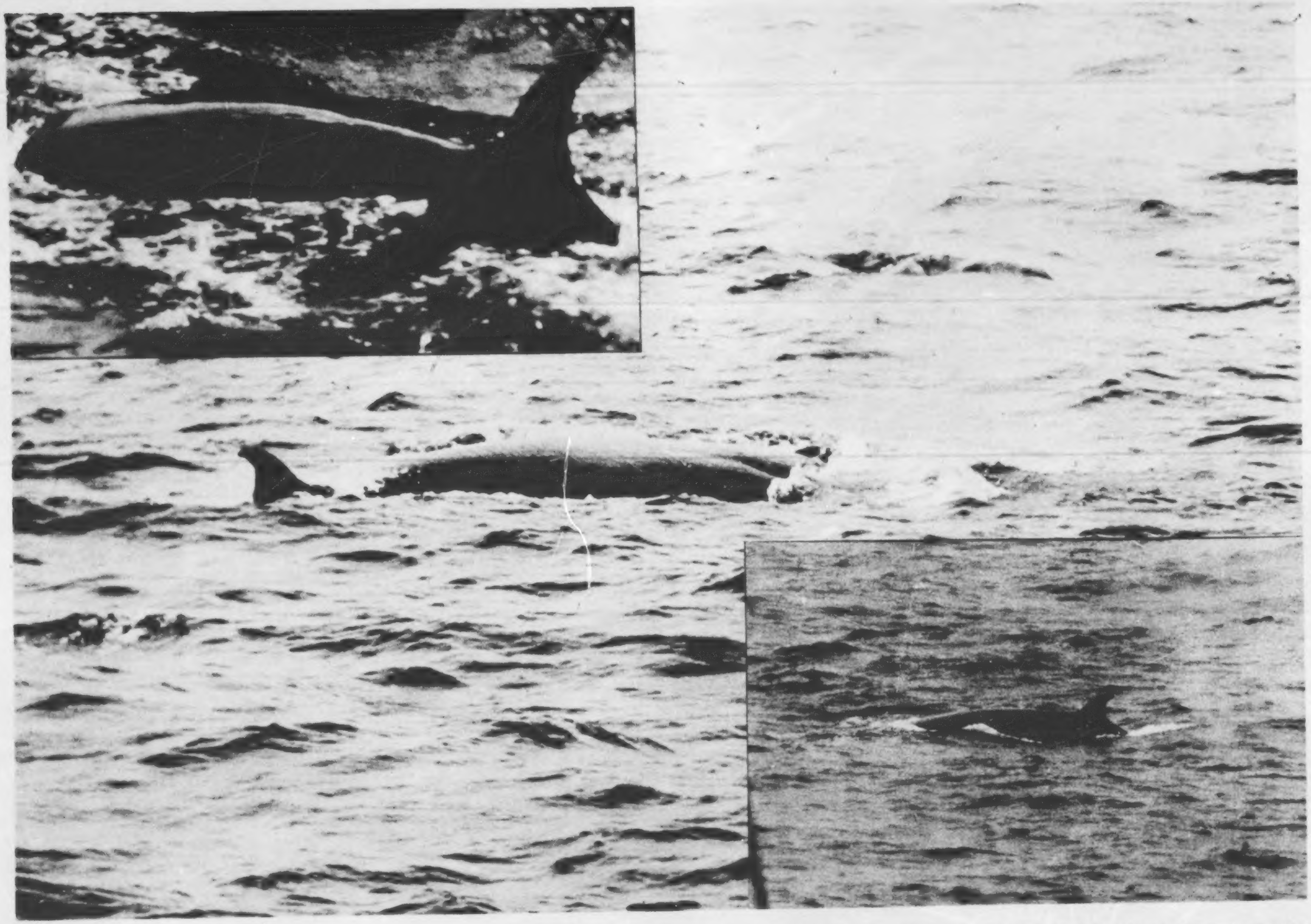


Figure 26.—Three views of swimming sei whales. In all three, note the tall, distinctly falcate dorsal fin (which has been described as sickle or scimitar in shape) positioned farther forward on the back than the fins of either the fin whale or the blue whale. In the photo in the middle, note that the dorsal fin has appeared on the surface while the blowholes are still open. Sei whales, generally skimmer feeders and rather shallow divers, often show the dorsal fin and much of the back for relatively long periods as they surface to breathe. (*Photos from off central California, courtesy of National Marine Fisheries Service [middle]; northeast of Hawaii by S. Ohsumi [left inset]; and from off Japan by Japanese Whales Research Institute, courtesy of H. Omura [right inset].*)

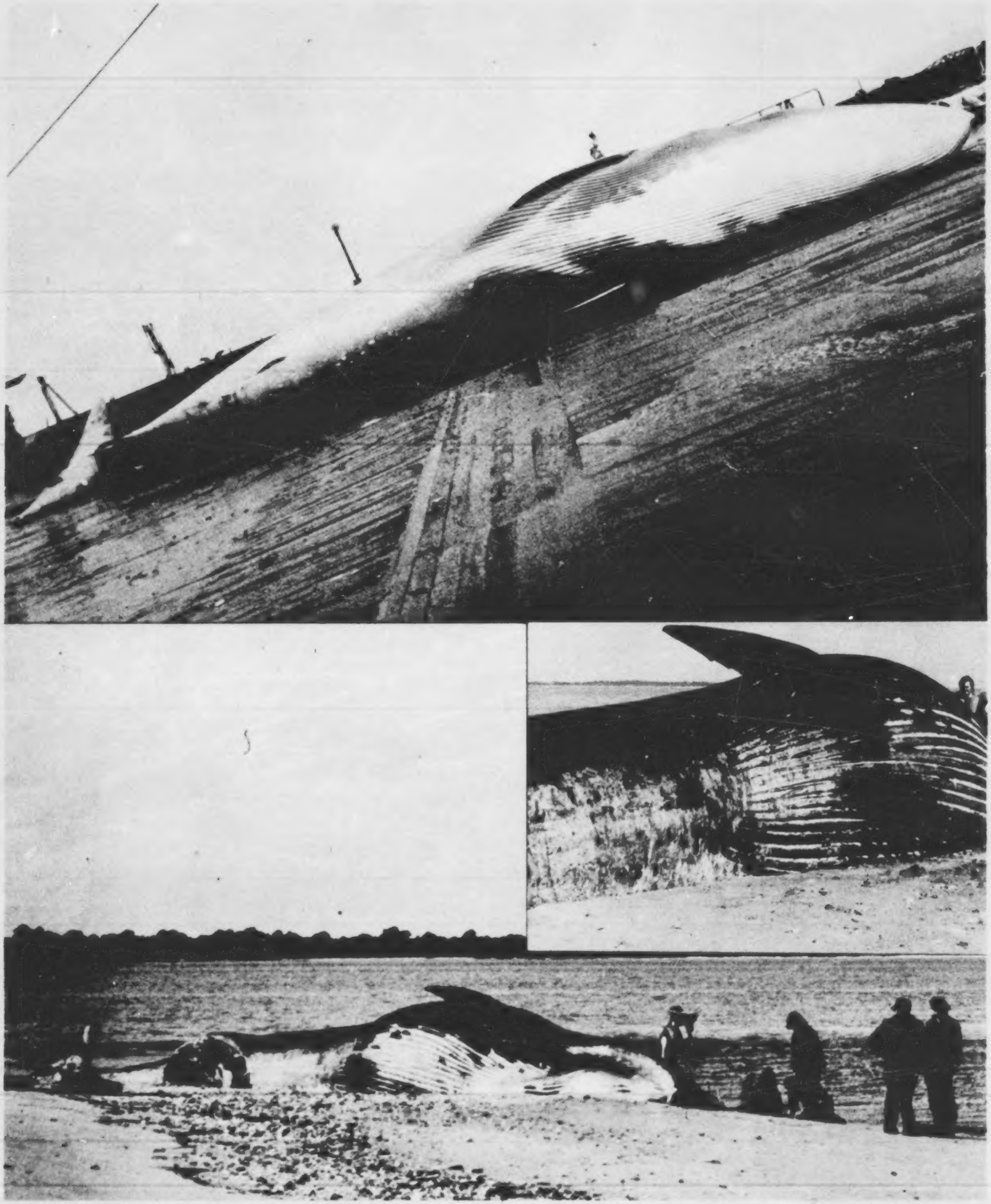


Figure 27. – A freshly dead sei whale from the Pacific (top) and a stranded specimen in an advanced stage of decomposition at Cape Island, S.C. (bottom and inset). Note that even though the distinctive coloration of the fresh specimen has faded on the rotting specimen, the numbers and lengths of the ventral grooves (38 to 56 in number and stopping well short of the navel) still permit the specimen to be distinguished from fin, blue, and Bryde's whales, in all of which the grooves extend at least to the navel. *(Photos by Japanese Whales Research Institute, courtesy of H. Omura [top]; and J. G. Mead [bottom and inset].)*

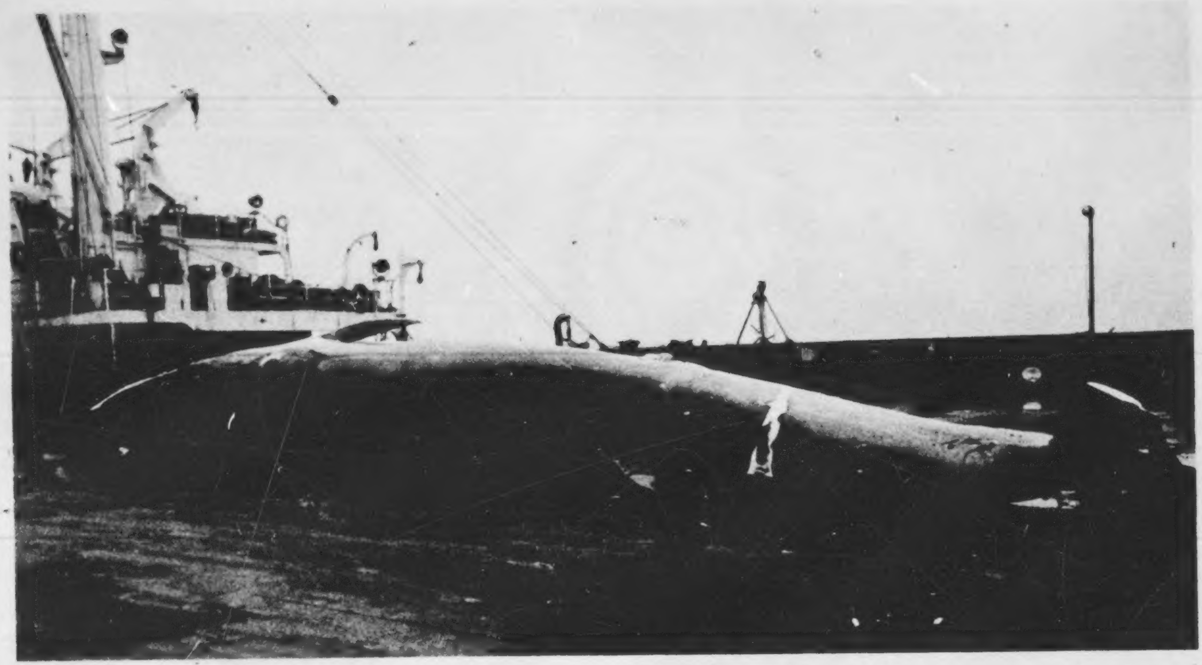


Figure 28.—Dorsal view of a sei whale on the deck of a whaling ship in the North Pacific. Note the numerous scars on the body and the otherwise dark gray coloration of the back. (*Photo by Japanese Whales Research Institute, courtesy of H. Omura.*)

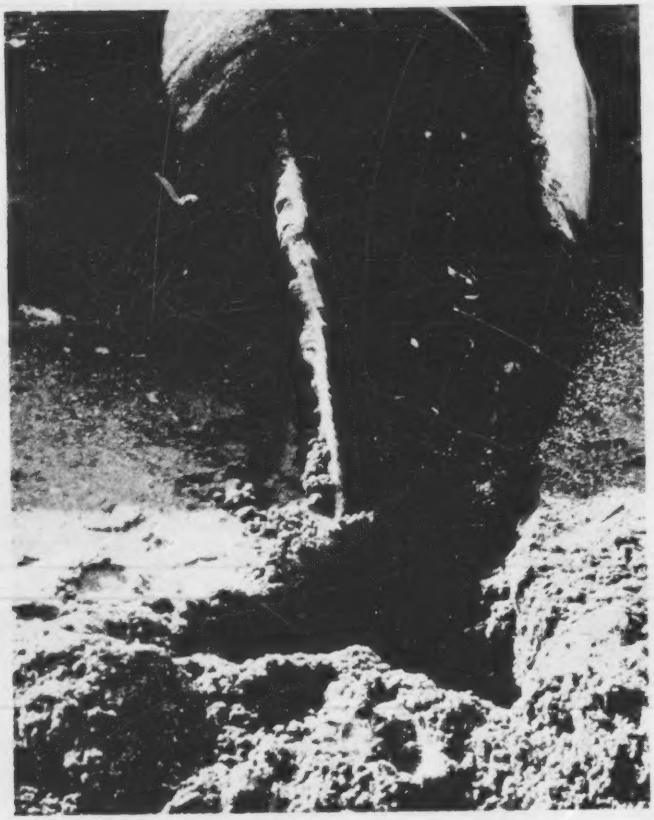


Figure 29.—The right upper jaw of the sei whale stranded at Cape Island, S.C. The baleen plates, here partly buried in the sand, numbering from 318 to 340 per side and uniform dark gray with *fine* lighter gray bristles, continue to serve as identifying characteristics even on a badly decomposed specimen. (*Photo by J. G. Mead.*)

BRYDE'S WHALE (B)

Balaenoptera edeni Anderson 1879

Other Common Names

None known.

Description

Bryde's whales reach a maximum length of approximately 46 feet (14 m). They closely resemble sei whales in external appearance. At a distance, the head of this species is similar in profile and general appearance to that of the sei whale. The most distinctive field characteristic of the species, however, is the presence of three ridges along the head anterior to the blowhole. In addition to the medial ridge characteristic of all the other balaenopterid species, Bryde's whales have two secondary ridges on the top of the head—one along each side even with the blowhole running forward towards the tip of the snout. If they can be examined at close range, Bryde's whales can be positively identified by this character alone.

The dorsal fin of Bryde's whales is up to 18 inches (45.7 cm) tall, extremely falcate, pointed on the tip, located well more than one-third forward from the tail, and is often irregularly notched or frayed on the rear margin from unknown causes. Bryde's whales are dark gray overall, though some individuals, like some minke whales, have a small region of gray on each side just forward of the dorsal fin.

Natural History Notes

Bryde's whales, like minke whales, reportedly often approach close to vessels as if curious about them. During this time they may be examined carefully and their identifying characteristics seen.

Though euphausiids may be an important food for this species in limited areas, Bryde's whales often feed on schooling fish (including pilchards, anchovies, herring, and mackerel). This food preference is reflected in the diving behavior of the species. Bryde's whales are not "skimmer" feeders; they are deeper divers. When they surface to breathe, they often rise more steeply to the surface, exposing much of the head, roll the body sharply, and hump up the tail stock before beginning another dive. In this species, as in the fin whale, it can be generally stated that the amount of the back which is exposed above the surface as the animal sounds is approximately twice the height of the dorsal fin. They apparently do not raise the tail flukes when beginning a dive.

May Be Confused With

At sea Bryde's whales may be confused with sei whales, fin whales, and perhaps minke whales.

They may be most readily distinguished from sei whales by the characteristics discussed on p. 32 and by differences in diving behavior. The shallow-feeding sei whales surface and blow at regular intervals over long periods of time. Bryde's whales are deeper divers, less likely to surface, and blow at evenly spaced intervals. If they are seen only briefly or at a distance, however, the two species may be impossible to differentiate.

During the winter months, when fin whales may venture into tropical waters, they may also be confused with Bryde's whales. But fin whales seldom exhibit curiosity about boats. In addition, the dorsal fin of the fin whale is larger, is located farther back on the back than that of Bryde's whale, and does not become visible as soon after the blow. It is also less likely to be worn on the rear margin than that of a Bryde's whale.

The head of the fin whale is more acutely pointed. Furthermore, the right lower lip and the right front baleen of the fin whale are white. The baleen and the right lower lip of Bryde's whales are dark gray. If the animals can be approached closely from the right side, positive identification is possible using these differences in color.

Like Bryde's whales, minke whales often approach close to vessels. But minke whales have an acutely pointed snout, a single head ridge, and a white band on each flipper. Further, minke whales rarely reach 30 feet (9.1 m) in maximum length.

Distribution

The distribution of Bryde's whales is rather poorly known, no doubt in part, because the species is difficult to positively identify at sea, and records of its occurrence may have often been confused with those of sei whales, fin whales, or minke whales. From stranded animals and confirmed sightings at sea, the species appears to be found primarily near shore in areas of high productivity in tropical or subtropical waters, though it ventures into warmer temperate waters as well. It has been reported from Virginia south into the northeast Gulf of Mexico and the southeast Caribbean, and southern West Indies (Curacao and Granada). To date no migration has been described for the species.

Stranded Specimens

Stranded Bryde's whales can be positively identified by the three ridges along the top of the head from the area of the blowhole to the tip of the snout. All other species of balaenopterid whales, except humpback whales have but a single ridge. If the head of a stranded specimen is buried in sand, is decomposed beyond recognition, or is otherwise inaccessible for identification, Bryde's whales can still be distinguished from sei whales by differences in the relative lengths of the ventral grooves (Table 2) and from both the fin whale and the sei whale by differences in the characteristics of the baleen plates (Table 2).

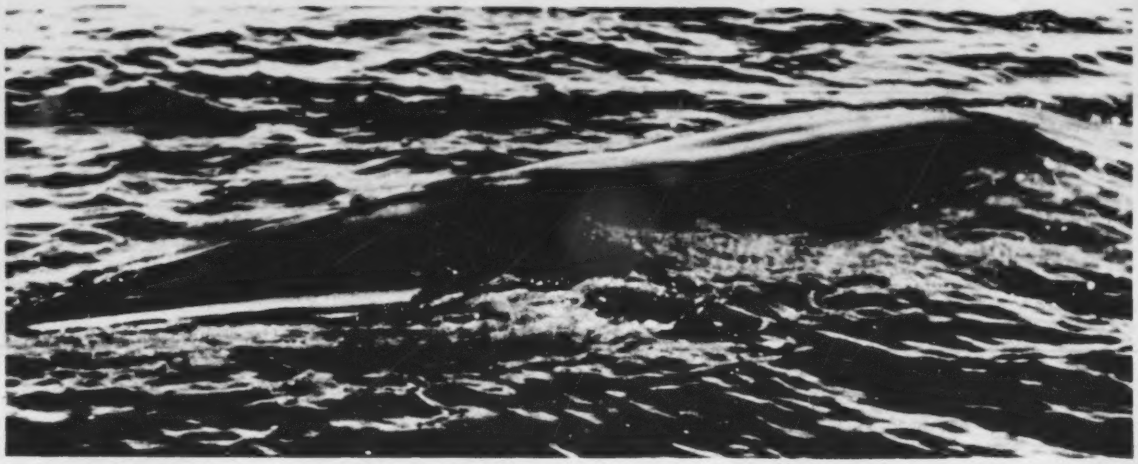


Figure 30. – On the head of this Bryde's whale off La Jolla, Calif. two of the three head ridges characteristic of the species, the main ridge and the left auxiliary ridge, are clearly visible. These ridges permit this animal to be positively identified as a Bryde's whale. (*Photo by F. Morejohn.*)

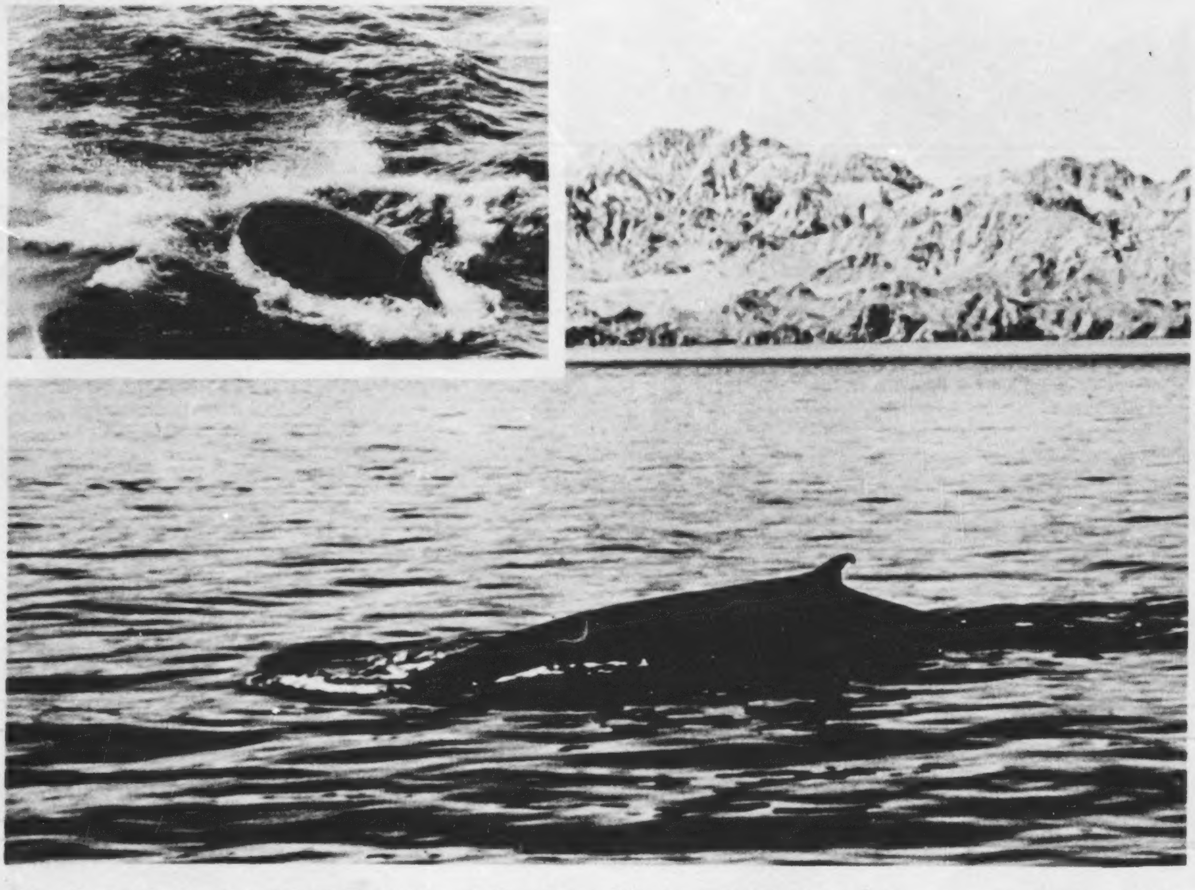


Figure 31. – Bryde's whales in the Gulf of California and north of Hawaii (inset). In both, note the tall, sickle-shaped appearance of the dorsal fin, much like that of the sei whale. In the animal in the larger photo note the ragged rear margin of the dorsal fin, a frequently observed characteristic in Bryde's whales. In the animal on the left note also the region of gray on the sides in front of the dorsal fin. (*Photos by W. C. Cummings and S. Ohsumi [inset].*)

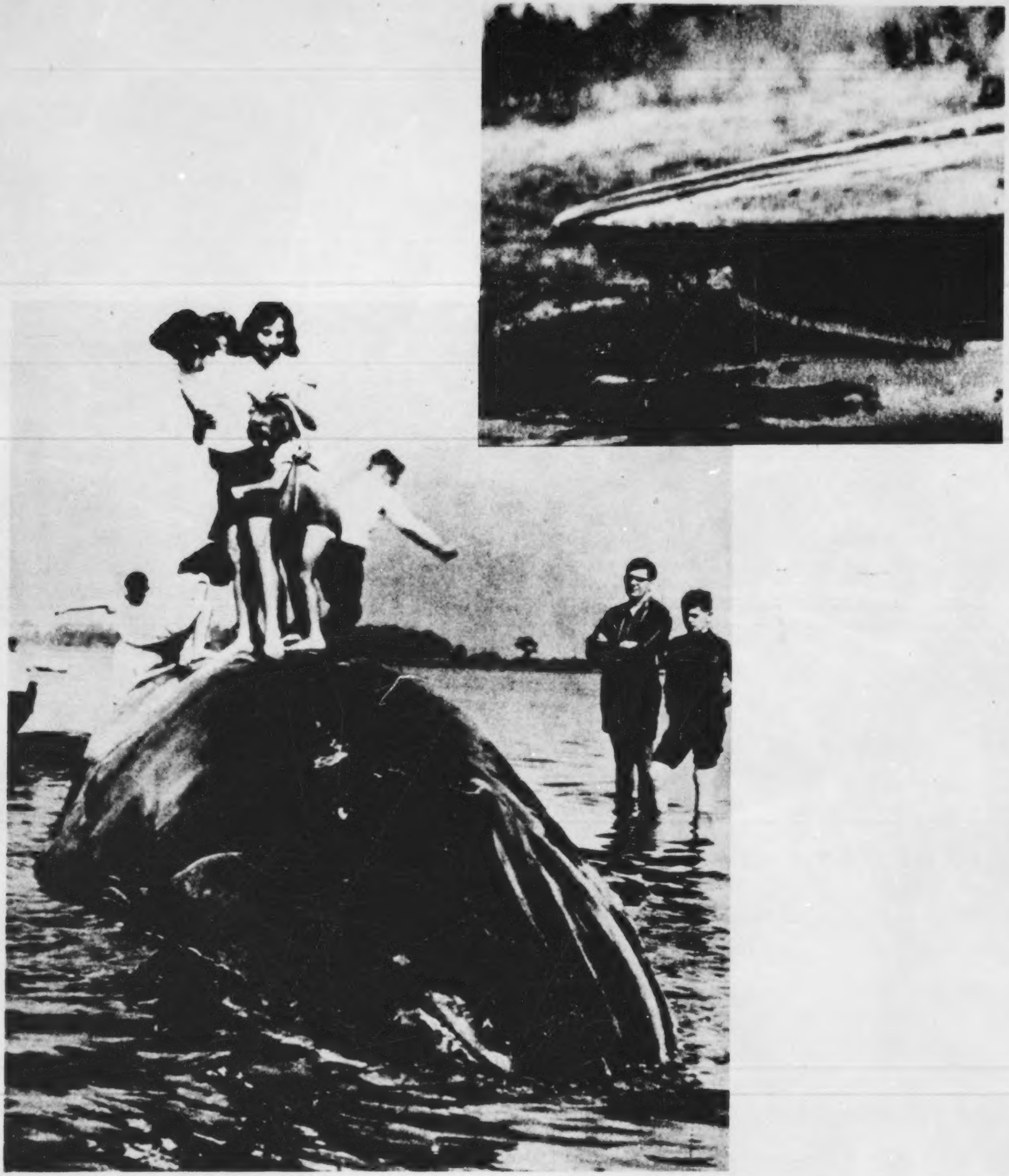


Figure 32.—Stranded Bryde's whales at Walnut Point, Va. (top) and Panacea, Fla., Gulf of Mexico (bottom). In both animals note the head shape similar to that of the sei whale, and the three distinct head ridges. In the animal on the bottom, note that the two outermost ridges have their origin in grooves beside the blowholes. In the animal on the top, note also the baleen plates, up to at least 300 per side and dark gray with coarse gray bristles. There is frequently a rather wide interval at the front of the mouth between the left and right rows of baleen. (*Photos by U.S. National Museum, courtesy of J. G. Mead* [*top*] *and M. B. Rank, courtesy of Wide World Photos* [*bottom*].)

HUMPBACK WHALE (B)

Megaptera novaeangliae (Borowski 1781)

Other Common Names

Humpbacked whale, bunch, hump whale, or hunchbacked whale.

Description

Humpback whales reach a length of 53 feet (16.2 m).

The body is robust, narrowing rapidly on the tail stock. The head is quite broad and rounded, somewhat like that of the blue whale. The head ridge characteristic of other balaenopterid species is indistinct and is replaced in prominence by a string of fleshy "knobs" or protuberances, many more of which are randomly distributed on the top of the head and on the lower jaw. There is a distinctive rounded projection near the tip of the lower jaw. Humpback whales carry many barnacles and whale lice. The baleen plates are all black with black or olive-black bristles.

The flippers are very long (nearly a third as long as the body), are scalloped on at least the leading edge, and are nearly all white.

The dorsal fin, located slightly more than two-thirds of the way back on the back in approximately the same position as that of the fin whale, is small and varies in size and shape from a small, triangular nubbin to a more substantial, sharply falcate fin. The dorsal fin frequently includes a step or hump, which is quite distinct when the animal arches its back to begin a dive and from which the species derives its common name.

Humpback whales are basically black in color with a white region of varying size on the belly, which upon close examination may often be seen to be crosshatched with thin dark lines; the flippers and the undersides of the flukes also are white.

Natural History Notes

The blow of humpback whales is from 8 to 10 feet (2.4 to 3.1 m) tall and has been described as balloon-shaped. It is wide relative to its height. Feeding humpback whales habitually blow 4-8 times at intervals of 15-30 s after a long dive. In the tropics they habitually blow 2-4 times in succession when beginning a long dive. In diving, humpback whales throw the tail flukes high into the air, exposing the sometimes white undersurface and the rippled rear margin.

Humpback whales often leap clear of the water, raise a flipper, and slap it against the water, or "lobtail," raising the tail high into the air and bringing it crashing back to the water in a loud report. Often, particularly when they are encountered on their tropical breeding grounds, humpback whales will be found lying on their sides with a long flipper in the air.

Humpback whales feed on krill and schooling fish.

May Be Confused With

From a distance humpback whales may be confused with any of the other large balaenopterid (rorqual) whales—blue, fin, sei, or Bryde's. Although it is highly variable, the dorsal fin most closely resembles that of the blue whale. However, it is located farther forward on the back. Humpback whales distinguish themselves from the remainder of the rorquals by their habit of raising the flukes high into the air when starting a long dive. (In very shallow water they may not raise the flukes at all.) The only other rorqual to do so—the blue whale—raises the flukes slightly or not at all.

Under some conditions humpback whales may be confused with sperm whales at a distance. When arching the back to begin a dive, both may show a distinct hump. Both species frequently raise their flukes nearly vertically when beginning a long dive but differ in several ways. The flukes of humpback whales show varying amounts of white beneath, are pointed on the tips, and are distinctly concaved and irregularly rippled on the rear margin. Those of sperm whales are all dark and more flattened and even along the rear margin. Further the species can be distinguished in the following ways:

Humpback Whale	**Sperm Whale**
BLOW	
Projects upwards from center of head. Usually blows 4-8 times (2-4 times in tropics) before diving.	Projects obliquely forward from left side of tip of snout. Usually blows many times (20-50 or more) before diving.
HEAD	
Raised area around blowholes, knobs on upper surface.	Blunted, long, smooth.
FLUKES	
Often white underneath, concaved and scalloped on rear margin, deeply notched.	Smooth, all black on rear margin.
FLIPPERS	
Extremely long (to one-third of body), white and scalloped on leading edge.	Short; all black.
DORSAL FIN (OR HUMP)	
Triangular to falcate fin, including a step or hump in front of the dorsal fin; smooth.	Rounded hump, two-thirds back on back followed by knuckles or crenulations.

When they can be examined at close range, humpback whales can be easily distinguished from all other large whale species with a dorsal fin by the tuberosities or knobs on the head, by the long white flippers scalloped on the leading edge, by the small distinctive dorsal fin, and by their distinctive tail flukes.

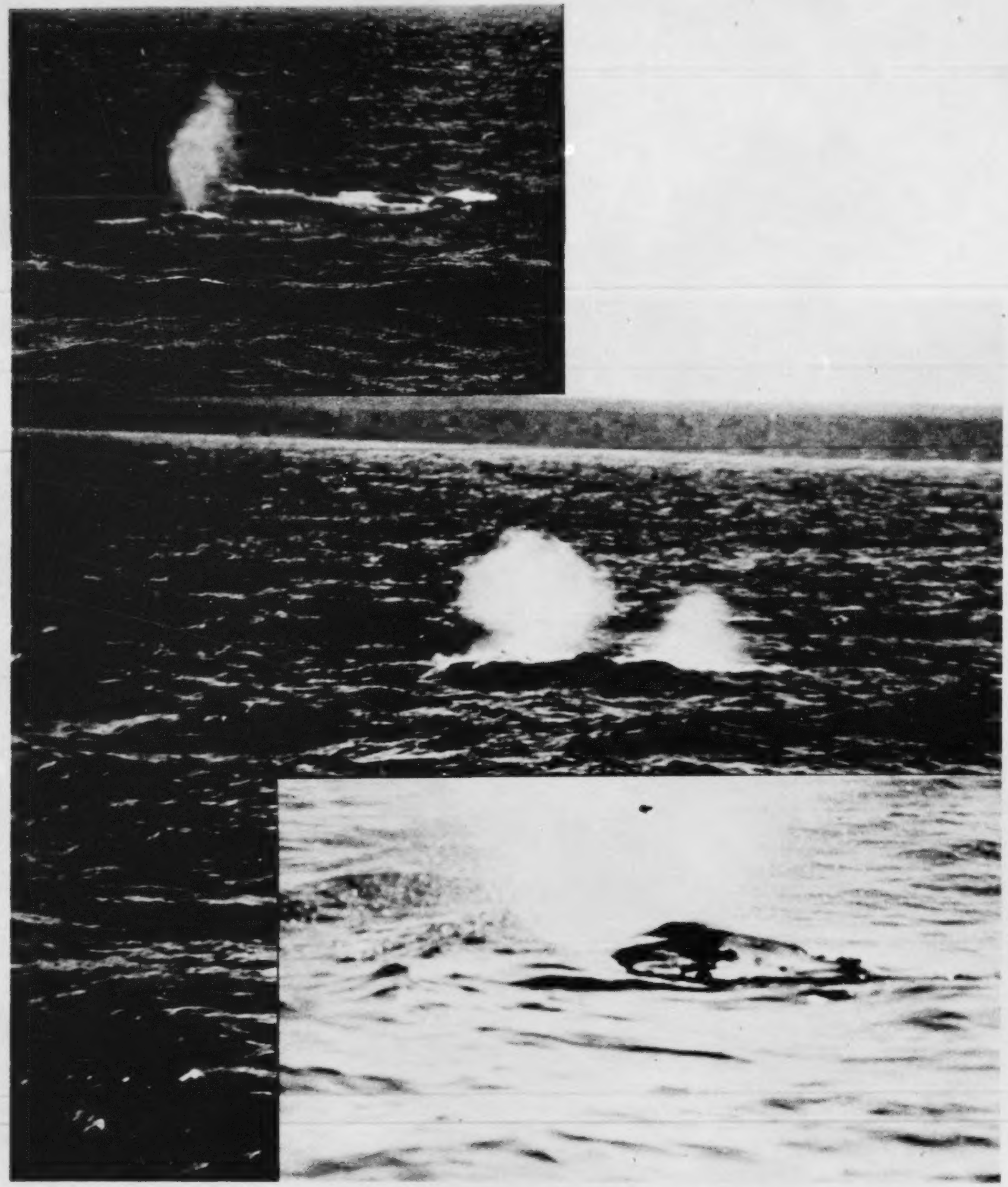


Figure 33. — Three views of blowing humpback whales. The blow of this species is usually less than 10 feet (3.1 m) tall, wider than it is high, and has been described as balloon-shaped. In the photo on the top, the wind has already begun to distort the blow. In the photo on the bottom, two separate columns are visible. All baleen whales have a bipartite blowhole, and if an observer is directly behind or in front of either the right whale or the humpback whale under ideal wind conditions, the blows of these two species may appear as two distinct spouts. (*Photos from West Indies by H. E. Winn* [*top and middle*] *and from off St. Augustine, Fla. by D. K. Caldwell* [*bottom*].)

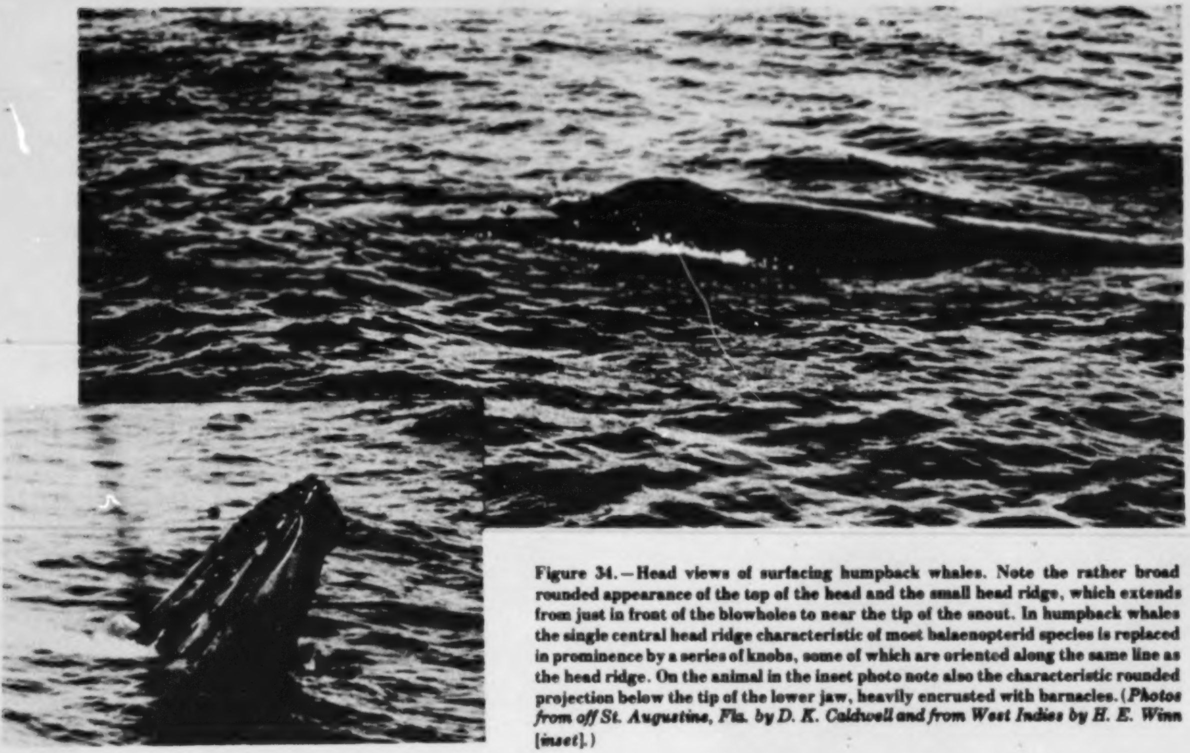


Figure 34.—Head views of surfacing humpback whales. Note the rather broad rounded appearance of the top of the head and the small head ridge, which extends from just in front of the blowholes to near the tip of the snout. In humpback whales the single central head ridge characteristic of most balaenopterid species is replaced in prominence by a series of knobs, some of which are oriented along the same line as the head ridge. On the animal in the inset photo note also the characteristic rounded projection below the tip of the lower jaw, heavily encrusted with barnacles. (*Photos from off St. Augustine, Fla. by D. K. Caldwell and from West Indies by H. E. Winn [inset].*)

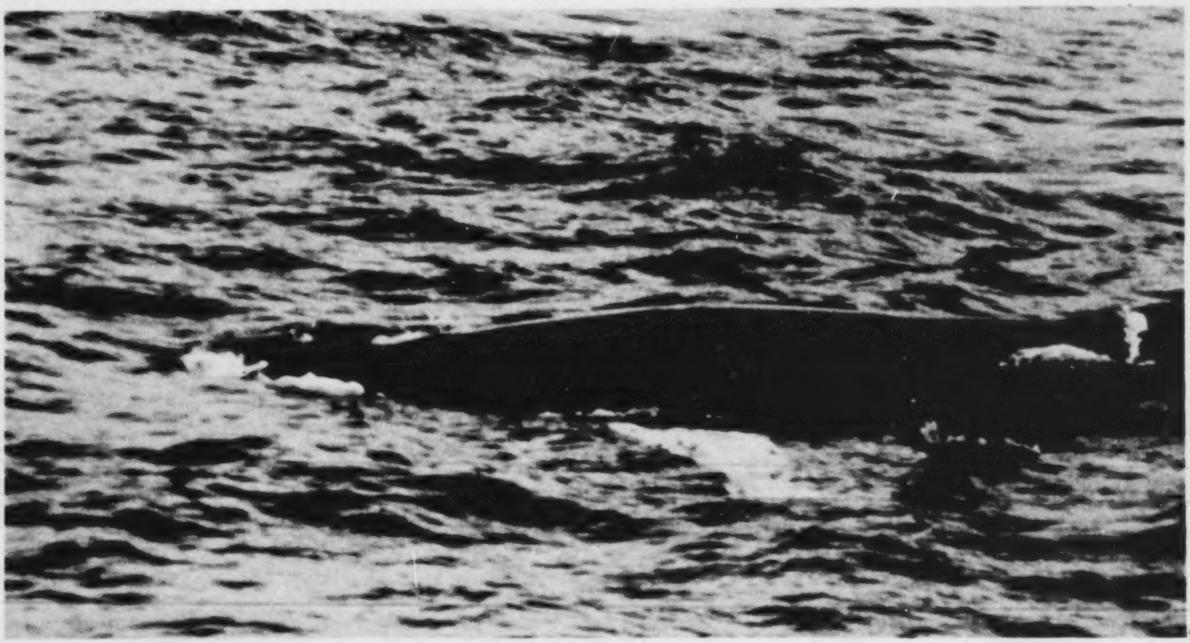


Figure 35.—A mother humpback whale with her newborn calf off the northern West Indies. Newborn humpback whales are from 12 to 15 feet (3.7 to 4.6 m) long and are colored like the adults. Note the mother's long white pectoral flipper, clearly visible below the surface. (*Photo by H. E. Winn.*)

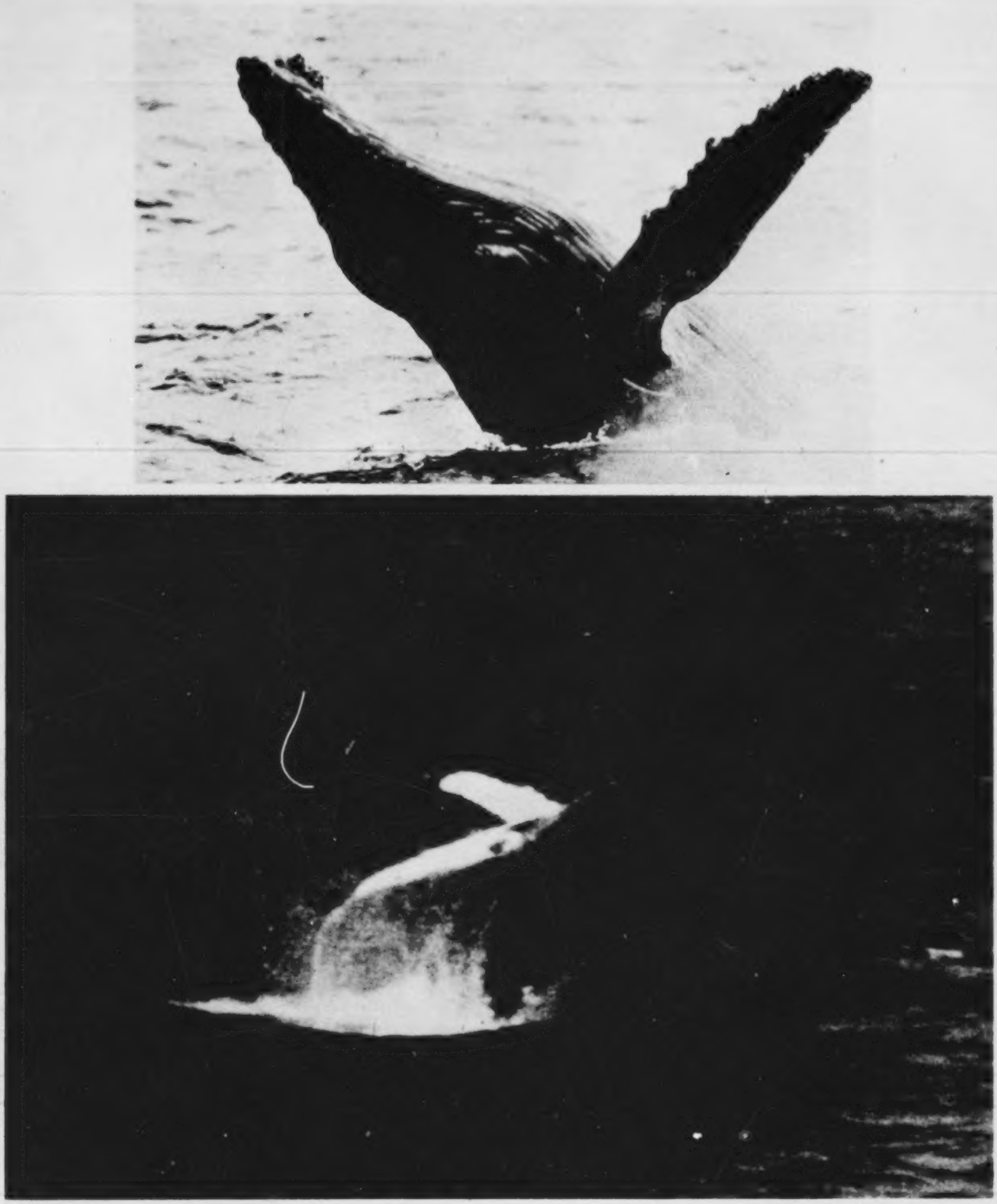


Figure 36.—Humpback whales fall back into the water after breaching. Note the long flippers, distinctly scalloped on the leading edge. In the animal on the top, note also the knobs on the head, visible in profile, the cluster of barnacles located on the rounded projection below the tip of the lower jaw, and the throat grooves. (*Photos off Baja California by K. C. Balcomb [top] and off Bermuda by C. Levenson [bottom].*)

Distribution

In the western North Atlantic, humpback whales are widely distributed from north of Iceland, Disko Bay and west of Greenland, south to Venezuela and around the tropical islands of the West Indies. They have been reported from the central and eastern Gulf of Mexico. Summer ranges extend at least from New England north to the pack ice, and feeding concentrations may be found in any portion of this region. During winter, humpback whales migrate southward to the shallow borderlands of Bermuda, to the Bahamas, and to the West Indies to calve and mate.

Stranded Specimens

The most distinctive features of stranded humpback whales are 1) the ventral grooves, 14-22 in number, very wide and extending to the navel; 2) the tuberosities of the snout and lower jaw, often the sites of numerous barnacle colonies; 3) the long flippers (to nearly a third of the total body length); and 4) the distinctive rounded projection near the tip of the lower jaw.

If these characteristics are not sufficiently clear, the species may be identifiable by the characteristics of the baleen plates (Table 2).

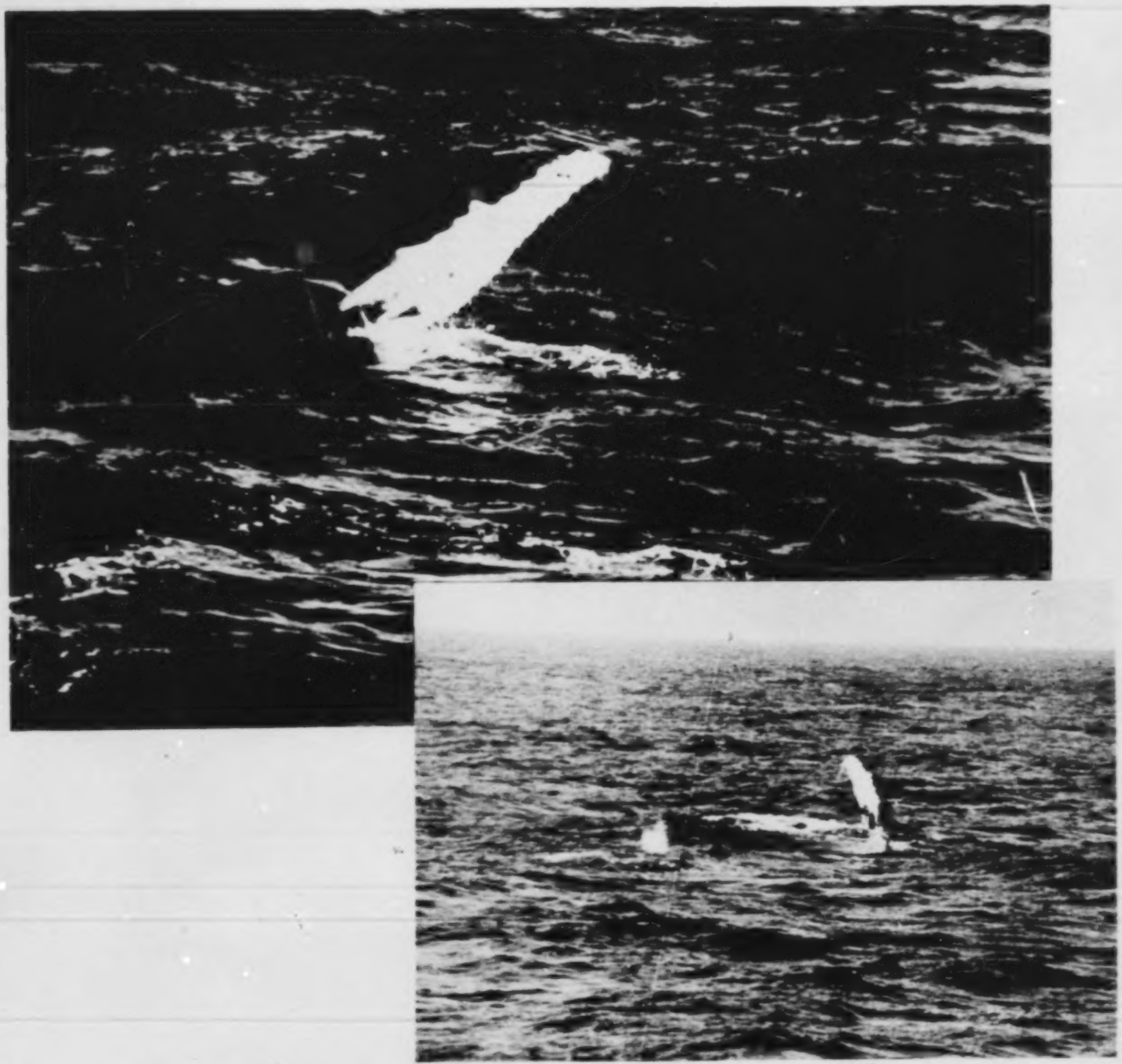


Figure 37. – Often, particularly on their tropical breeding grounds, humpback whales lie on their sides at the surface, the long white pectoral flipper in the air. Note the pronounced scalloping on the leading edge. (*Photos near West Indies by C. McCann [top] and H. E. Winn [bottom].*)

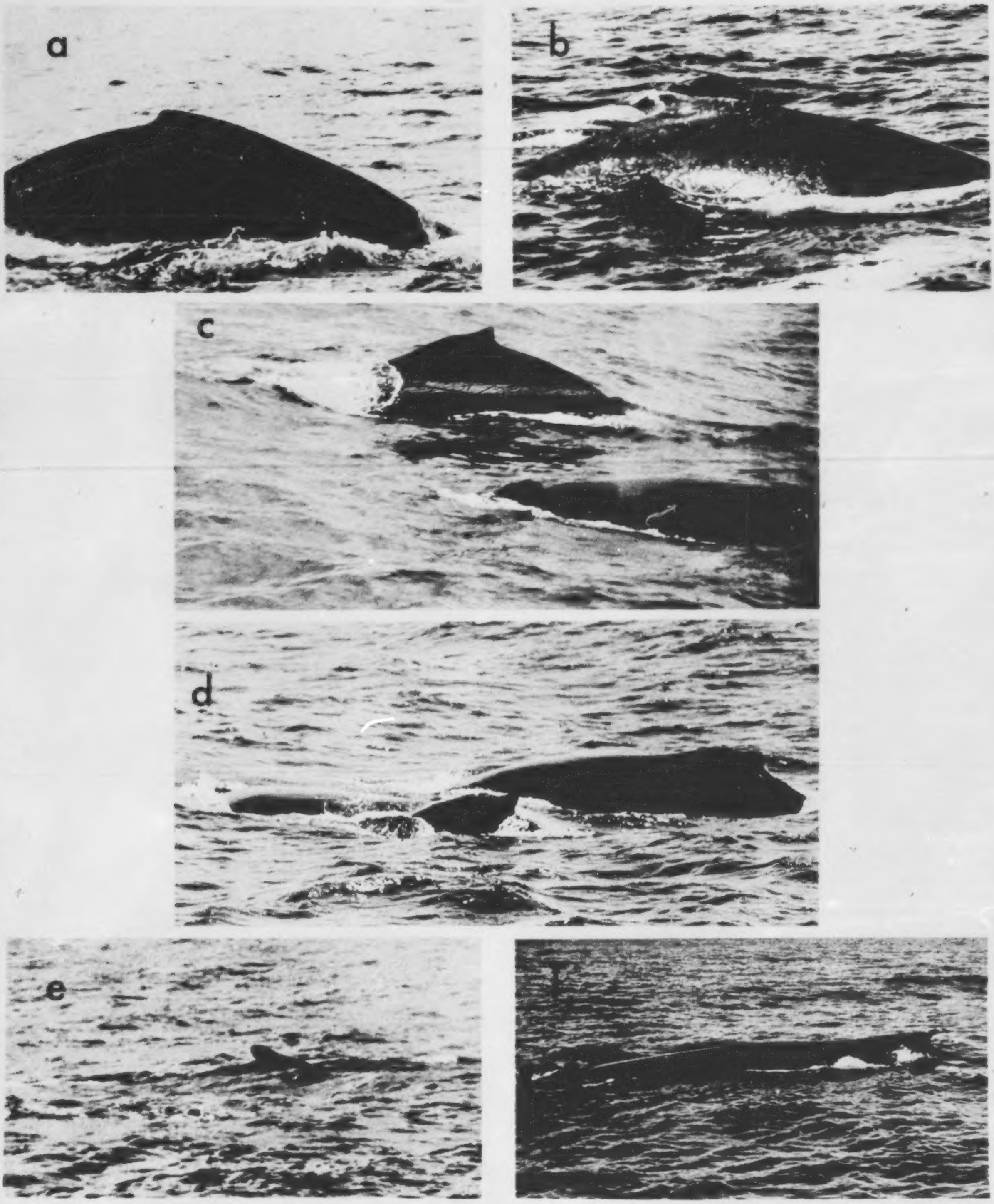


Figure 38. – A series showing the extreme variability in dorsal fin shapes of humpback whales: (a) a small ridge, (b) slightly falcate, (c) triangular with a pronounced hump, (d) slightly rounded, (e) distinctly rounded, and (f) taller and more distinctly falcate. *(Photos from northern West Indies by H. E. Winn [a, c, e] and C. McCann [b]; off Baja California by K. C. Balcomb [d]; and off St. Augustine, Fla. by D. K. Caldwell [f].)*

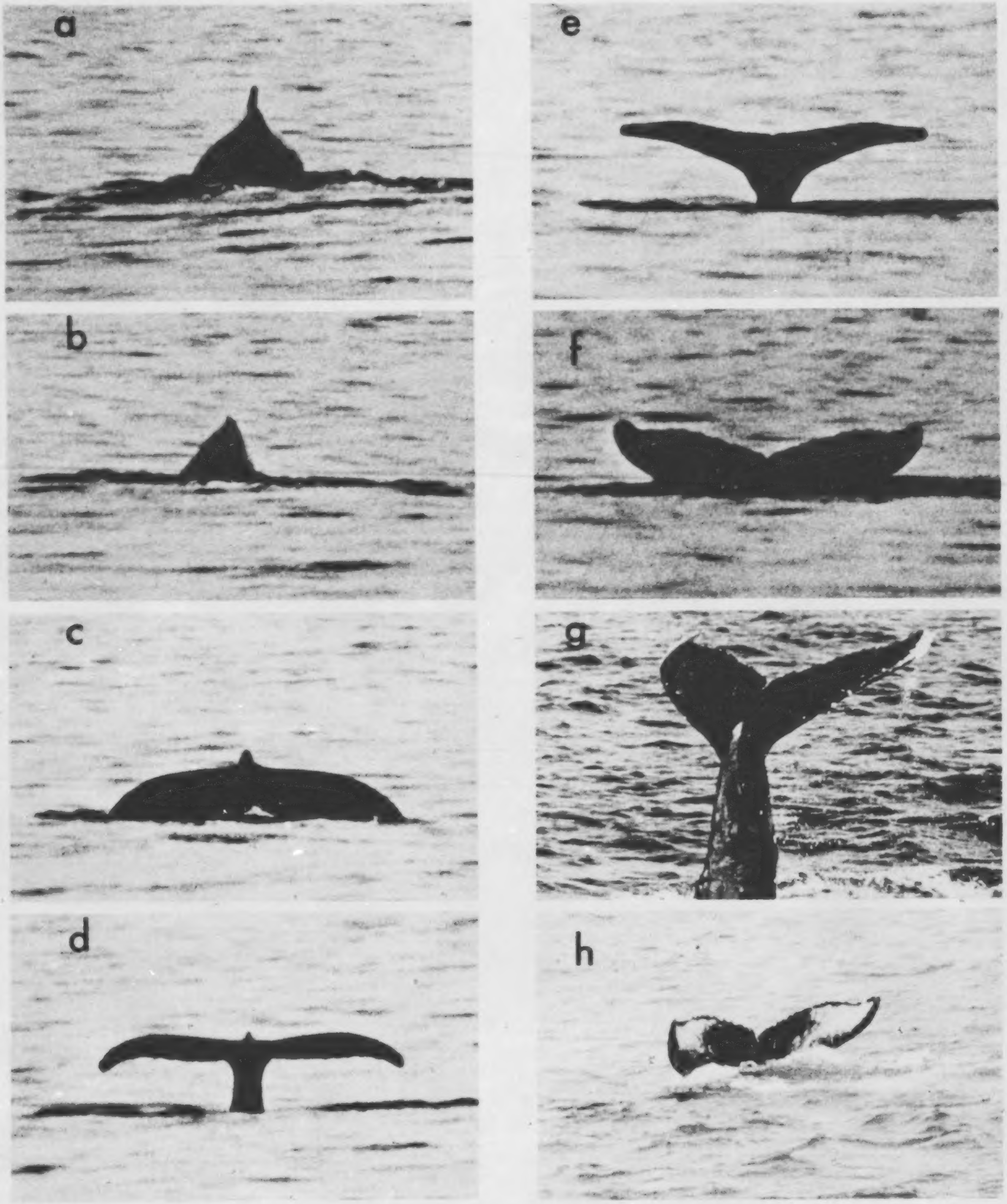


Figure 39. – The humpback whale is the only large whale species with a distinct dorsal fin which regularly raises its tail flukes when beginning a long dive. When it does so, the scalloped trailing edge is often visible (f, g, h). When the diving whale is seen from the rear, the varying degree of white coloration on the undersides of the flukes aids in identification (h). *(Photos from northern North Atlantic by K. C. Balcomb [a-f], from West Indies by C. McCann [g], and from off Massachusetts by W. A. Watkins [h].)*

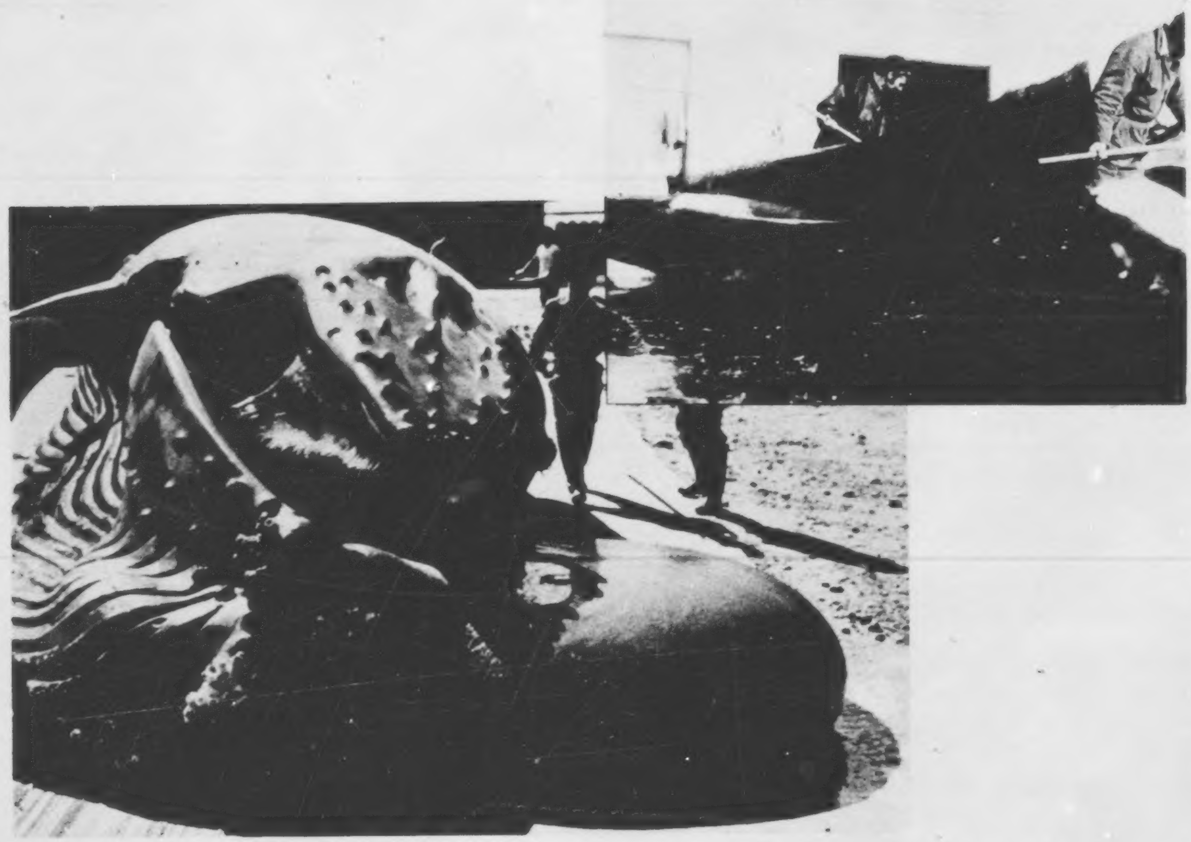


Figure 40. — Detail of the head of a humpback whale harpooned off Japan. Note the knobs along the top of the head and on the lower jaw, the rounded projection near the tip of the lower jaw and the wide ventral grooves. The large mass of tissue to the left of the animal is its tongue. In the inset photo from a Canadian whaling station, note the baleen plates, less than 3 feet (0.9 m) long and dark olive green to black in color. (*Photos by Japanese Whales Research Institute, courtesy of H. Omura; and J. G. Mead* [*inset*].)

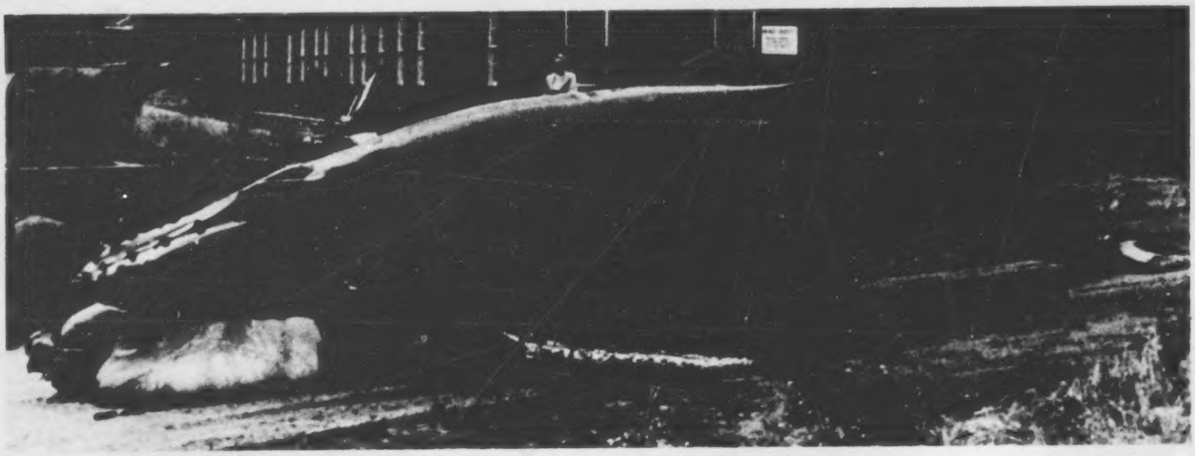


Figure 41. — A humpback whale on the deck of a whaling station in western Canada. All of the species' most distinctive characteristics are evident in this photograph: (1) the hump and the dorsal fin; (2) the knobs on the top of the snout; and (3) the long flipper, with numerous barnacles attached to its leading edge. (*Photo by G. C. Pike, courtesy of I. MacAskie.*)

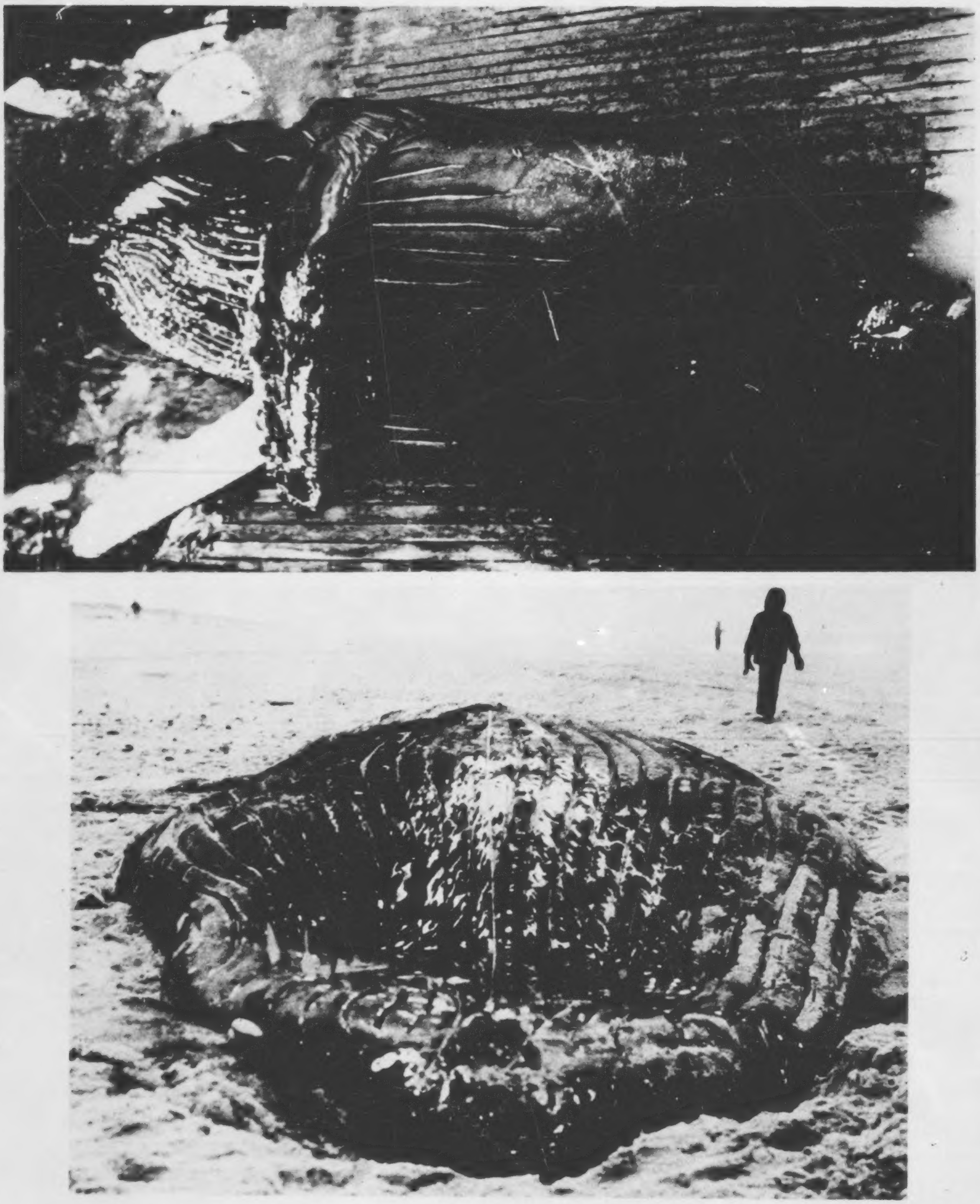


Figure 42.—North Atlantic humpback whales have from 14 to 20 broad, widely spaced ventral grooves which extend about to the navel. Those grooves remain good diagnostic characters for considerable periods after the animal's death, as evidenced in the freshly killed specimen from Newfoundland (top) and the badly decomposed stranded animal from New Jersey (bottom). (*Photos from U.S. National Museum, courtesy of J. G. Mead.*)

BOWHEAD WHALE (B)

Balaena mysticetus Linnaeus 1758

Other Common Names

Greenland whale, Arctic right whale, great polar whale.

Description

Bowhead whales, so-called because of the high-arching jaws and the resultant contour of the head, reach a maximum length of about 65 feet (19.8 m). They are extremely robust in form.

When viewed from the side, some swimming bowhead whales show two characteristic curves to the back: the first extends from the tip of the snout to just behind the blowholes; the second, encompassing the entire back, begins just behind the head and extends all the way to the tail. This character may be present only in adult animals and may be more pronounced in males. Younger animals, particularly females, are often stubbier and somewhat barrel-shaped behind the head. In all animals the back is smooth, lacking even a trace of a dorsal fin.

The head of the bowhead whale is smooth, black, and without the bonnet and the "rock-garden," the colorful clusters of callosities characteristic of the black right whale. The blowholes are widely separated, and the blow emanating from them projects upward as two separate, distinct spouts. Though two separate columns sometimes may be visible under windless conditions in the blows of most mysticetes, this feature is exaggerated and is most characteristic in the bowhead and right whales.

Bowhead whales are black overall, except for a white "vest" of uneven coloration on the chin. Within that vest, near the sides of the white zone, there may be a series of grayish black to black spots, which on some animals have been likened to a string of beads. The vest is clearly visible when a surfacing animal is viewed from the front or the side or when the animals hang vertically in the water with the head on the surface and the tail flukes down, as they do during periods of early spring mating.

Natural History Notes

Bowhead whales are ususally found singly or in groups of up to three animals, though fall concentrations may include up to 50 animals.

Bowhead whales sometimes breach, throwing most of the body clear of the surface and reentering with a resounding splash.

May Be Confused With

Bowhead whales are the only species of large whales found routinely in Arctic waters. Though other species, including some of the balaenopterid whales and the right whale, may venture north as far as the southern limits of the bowhead whale and beyond, they usually do so in the spring and summer, at a time when the bowhead whales are farther to the north. Even if they are encountered together, bowhead whales can be distinguished from all the balaenopterid whales by the absence of a dorsal fin. Bowhead whales have neither a fin nor the slightest trace of a dorsal fin or ridge, while all the balaenopterids have a dorsal fin; and their back is extremely smooth, like that of the right whale. The bowhead and right whales may be readily distinguished from one another by the characters listed below for stranded specimens.

Distribution

Though bowhead whales in the western North Atlantic were once distributed from Arctic waters, from the edge of the ice, south as far as the Strait of Belle Isle and the St. Lawrence River in such abundance that they were once referred to simply as "the whale," overwhaling through the 19th century until as recently as 1911 has severely reduced their numbers and restricted their modern range. Today in addition to the more abundant populations of the Bering, Beaufort, and Chukchi seas and the Sea of Okhotsk, there are populations off eastern Greenland and in Davis Straits, Baffin Bay, James Bay, and the adjacent waters. Within these ranges, bowhead whales move southward in front of the advancing ice floes and may be expected near the southern limits of their range from September or October through the early spring months. Populations in the western North Atlantic appear to be increasing slowly.

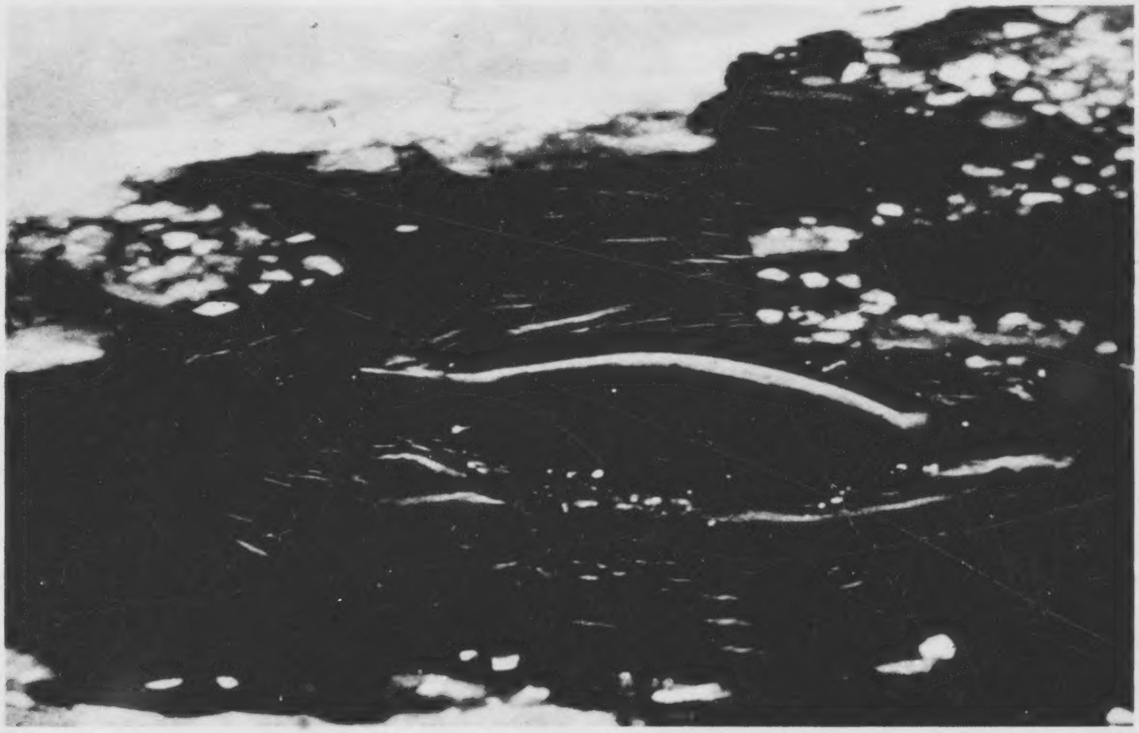
Stranded Specimens

In addition to the fact that their ranges may overlap only slightly if at all, bowhead whales may be distinguished from the other right whales of the western North Atlantic by differences in 1) primary distribution, 2) coloration, 3) lengths of the longest baleen plates, and 4) presence of callosities.

Bowhead Whale	**Right Whale**
DISTRIBUTION	
Arctic distribution south to Davis Straits only during winter.	Texas, southwest Florida north to Iceland, reaching northern limits only during spring and summer.
COLORATION	
Black with white "vest" on front part of lower jaw, sometimes containing a string of black spots; upper jaw lacks the "rock garden."	Sometimes black often brown or mottled with regions of white on chin and belly; patches of yellowish to pink callosities and lice encrusting the snout in what has been called a "rock garden."

BALEEN PLATES		BONNET AND OTHER CALLOSITIES	
325-360 per side; plates to 14 inches (35.6 cm) at base and longest plates up to 14 feet (4.3 m) long. Dark gray or black with gray fringes; anterior margin of some plates whitish, showing green iridescence in sunlight.	250-390 per side; plates 12 inches (30.5 cm) at base and up to 7.2 feet (2.2 m) long. Dirty gray with black fringes; some anterior plates partly or completely white.	Not present.	Present.

Figure 43.—Swimming adult bowhead whales, particularly males, often show two characteristic humps or curves to the back—one on the head, ending just behind the blowholes, and a larger curve from just behind the blowholes to near the flukes; the second is accentuated when the animal humps up to begin a dive. (*Photo by J. Lentfer.*)



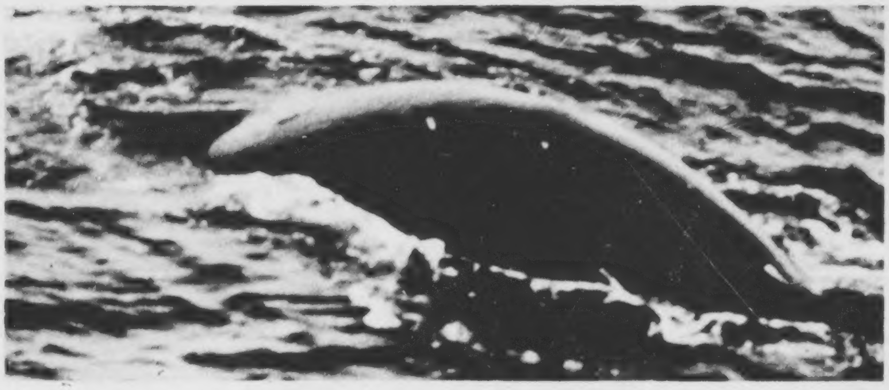


Figure 44.—Bowhead whales have no dorsal fin. The back is smooth and black, though often irregularly spaced white or grayish scars of unknown origin appear. (*Photos by J. Lentfer.*)

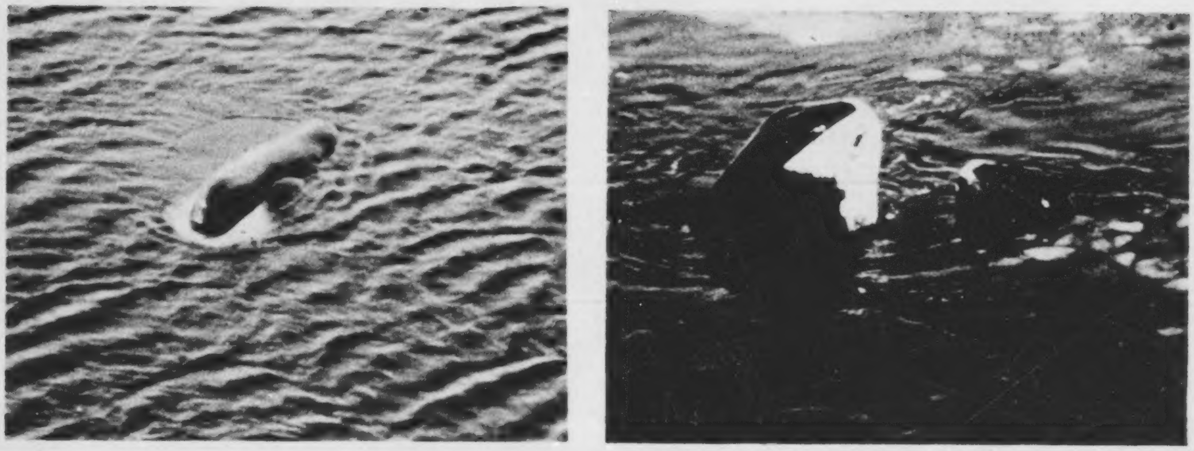


Figure 45. – The unusually shaped head and the broad lower jaw, colored by a broad white vest, are evident in the swimming bowhead whale (left) and in both members of the copulating pair (right). Also evident on the animal to the far left is the "string of black beads" which is sometimes found in the white region. (*Photos by J. Lentfer.*)

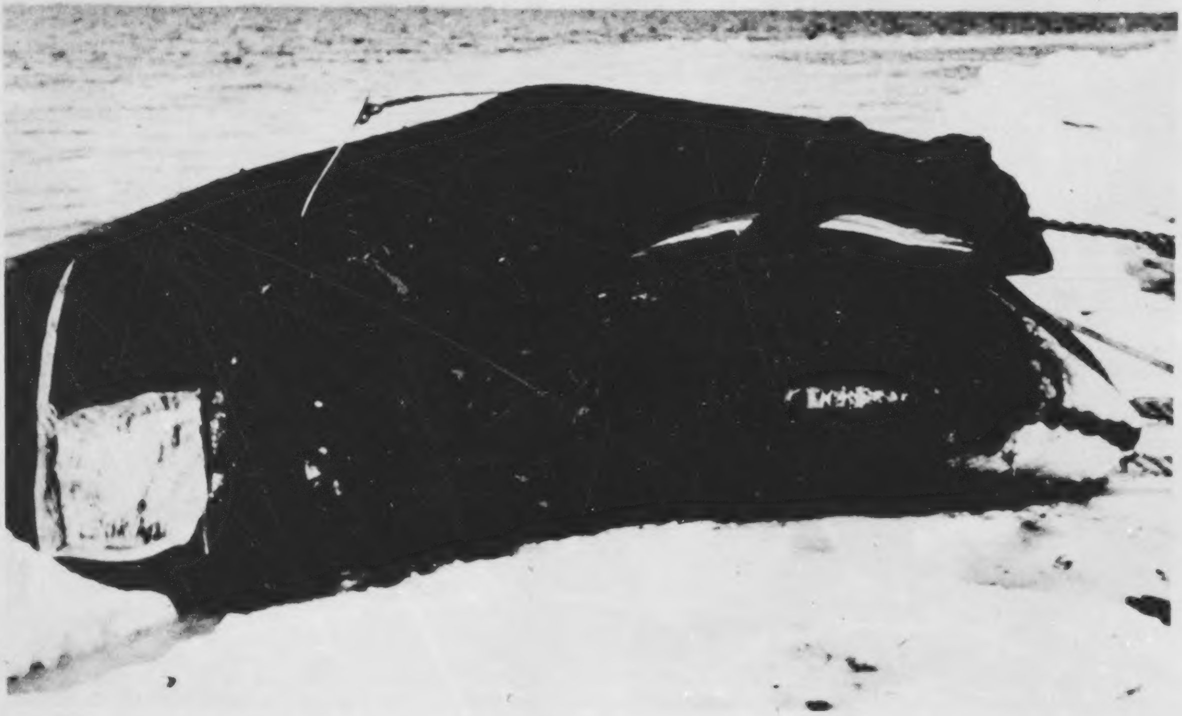


Figure 46. – A harpooned bowhead whale (this one from the Alaskan population). Note the high arching upper jaw of the species. Bowhead whales have up to at least 360 plates per side, far more than the black right whale. The longest plates, located near the middle of each jaw, are reported to reach 12 feet (3.7 m), or more, in length. (*Photo by D. R. Patten.*)

RIGHT WHALE (B)

Eubalaena glacialis (Borowski 1781)

Other Common Names

Black right whale, Biscayan right whale, Biscay whale, Nordcaper right whale.

Description

These right whales reach a length of about 53 feet (16.2 m).

The body is rotund and completely lacking a dorsal fin or a dorsal ridge. The upper jaw is long, narrow, and highly arched. The lips are similarly highly arched. The top of the head has a series of bumps or callosities, the largest one of which is known as the "bonnet," on the upper surface in front of the blowholes. Yellowish-brown lice and, less frequently, barnacles grow on the callosities. The color and extent of the callosities varies from one individual to the next.

The two blowholes are widely separated, resulting in the projection of the blow upward as two distinct spouts. The body is dark on the back, sometimes black, more often brown or mottled, usually has a region of white on the chin and belly, and sometimes has numerous small grayish-white scars of unknown origin. The baleen plates are up to 7.2 feet (2.2 m) long, very narrow, and variable in color from dark brownish through dark gray to black in color. When the animals swim, mouth agape near the surface, the baleen sometimes appears pale yellowish gray in color.

Natural History Notes

Right whales are usually not wary of boats and may often be approached very closely.

Like sperm and humpback whales, they usually throw their flukes high into the air when beginning a long dive.

Right whales feed primarily on copepods.

Historically, this whale was nearly exterminated by hunters, who took advantage of its slow speed and who knew that its carcass floats, to harvest these animals for their great yield of whalebone and oil. It was these characteristics which prompted whalers to dub these animals the "right" whales to kill (as opposed to the ones that were too fast to catch and sank when killed).

May Be Confused With

The distinct blow of the right whales and their smooth dark back, devoid of any traces of a dorsal fin, make it unlikely that the species will be confused with any other large whales except, perhaps, the bowhead whale. In the event that the expansion of their ranges again causes these two species to overlap in distribution, they can be distinguished from one another by the characteristics discussed on p. 49.

If only the flukes are seen as the animal begins a dive, right and bowhead whales may be distinguished from the other two species of large whales exhibiting this behavior, the sperm and the humpback, in this way: the flukes of right and bowhead whales are broad, pointed on the tips, greatly concave towards a deep fluke notch, and dark below: those of the sperm whale are more nearly triangular, while those of the humpback whale have a jagged irregular or rippled rear margin and are sometimes variously white below.

Distribution

Like its more northern relative, the bowhead whale, the right whale was once the object of a widespread and extensive whale fishery, which reduced the species to critically low numbers.

Though the former range of right whales is not clearly known, the species is thought to have been abundant from the Davis Straits south at least to the Carolinas and Bermuda and to have occurred in winter to Florida and perhaps into the Gulf of Mexico.

Currently, right whales are known from Iceland south to Florida. Animals move north along the eastern Florida coast between early January and late March. During this time the species has also been observed in the Gulf of Mexico off southwestern Florida and Texas. Right whales pass the coast of New England in fair numbers in spring and continue as far north as at least Nova Scotia. Right whales are also found off Iceland, though the migration routes to and from Iceland waters are not known. The recent apparent increases in numbers at the northern and southern coastal approaches in New England and Florida, respectively, lend credibility to the hopeful contention that the species will again recolonize its historical range.

Stranded Specimens

Stranded right whales can be easily identified by all the characters discussed on p. 49 and summarized in Table 2.

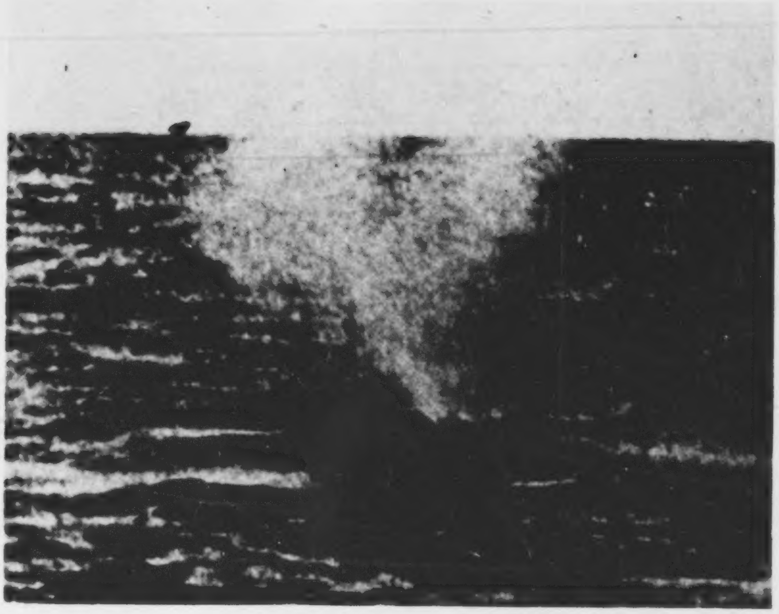


Figure 47.—The V-shaped blow characteristic of right whales. Note the two distinct spouts, bushy in appearance. (*Photo off Cape Cod by W. A. Watkins.*)

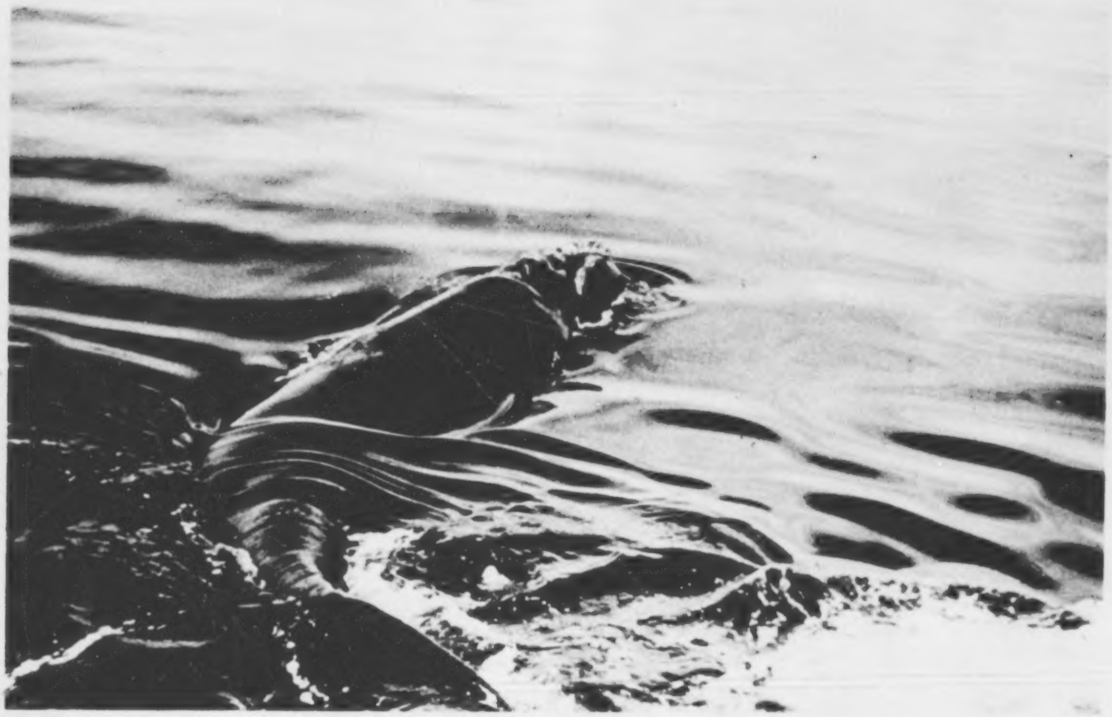


Figure 48.—A right whale off the northeastern Florida coast. Note the robust body, the smooth back, completely lacking a dorsal fin, and the narrow rostrum, bearing the characteristic yellowish callosities. Right whales, primarily mothers with calves, show up on the Florida coast in the early spring on their slow annual migration to the north. (*Photo by N. Fain, courtesy of Marineland of Florida.*)

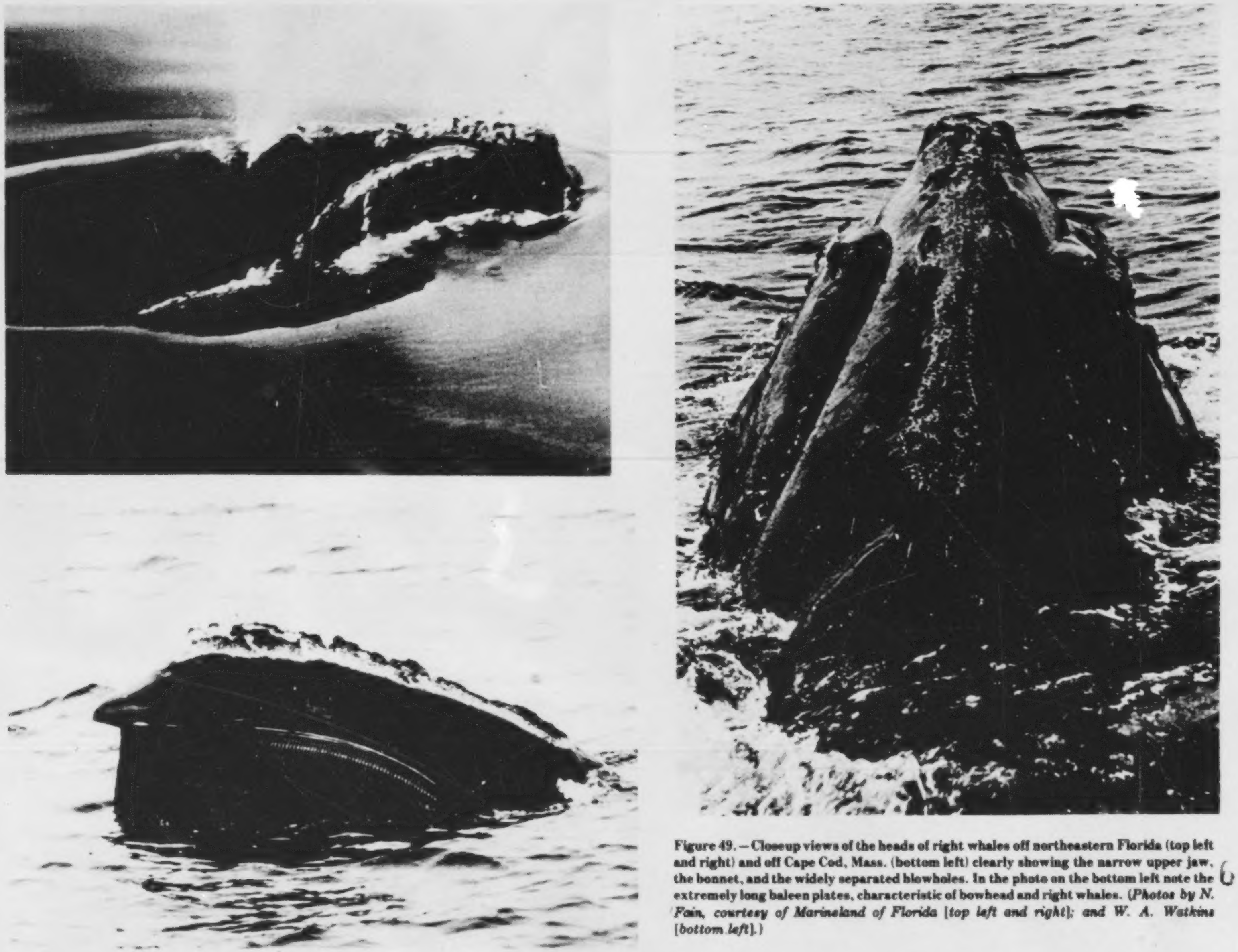


Figure 49.—Closeup views of the heads of right whales off northeastern Florida (top left and right) and off Cape Cod, Mass. (bottom left) clearly showing the narrow upper jaw, the bonnet, and the widely separated blowholes. In the photo on the bottom left note the extremely long baleen plates, characteristic of bowhead and right whales. (*Photos by N. Fain, courtesy of Marineland of Florida* [*top left and right*]; *and W. A. Watkins* [*bottom left*].)

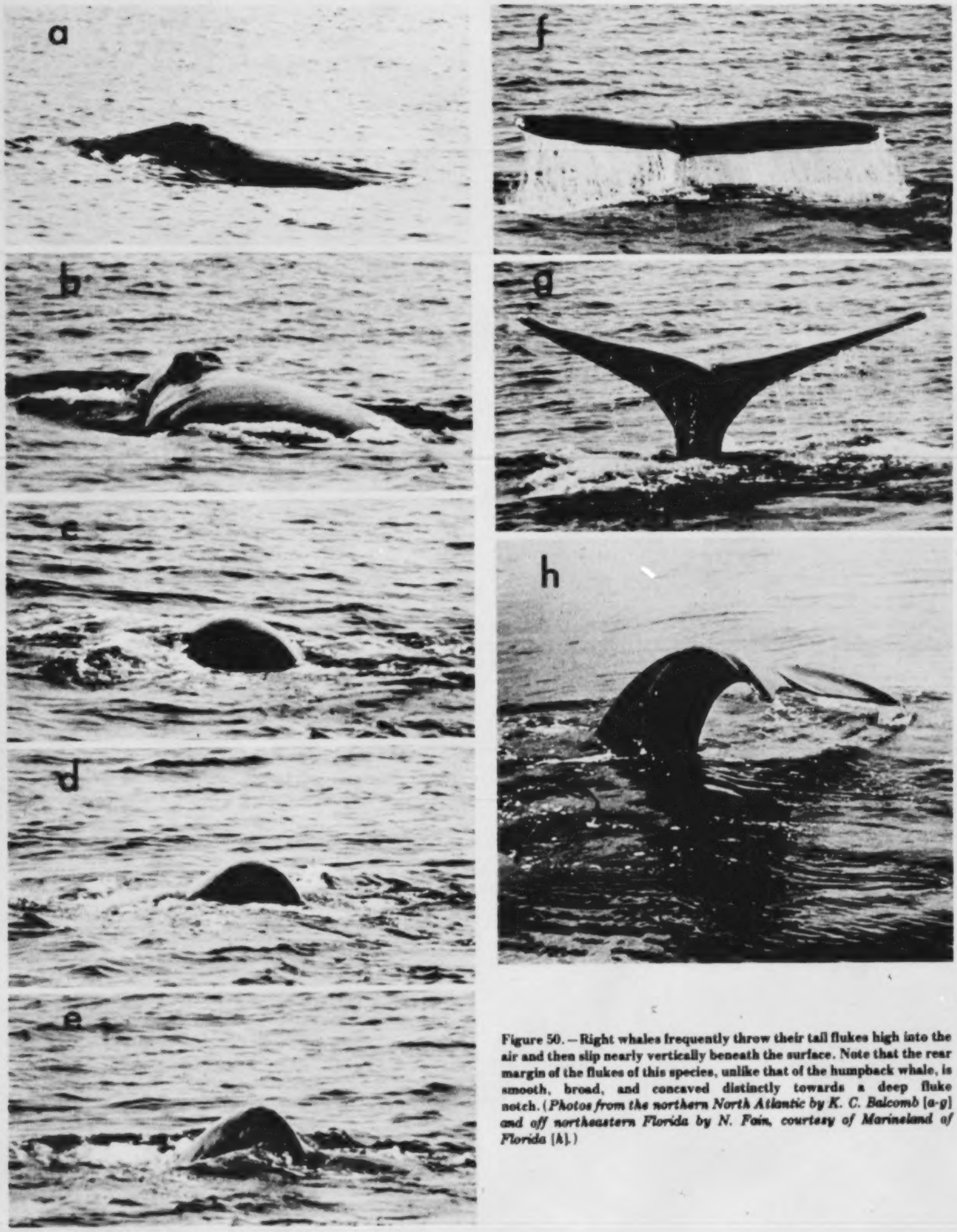


Figure 50. — Right whales frequently throw their tail flukes high into the air and then slip nearly vertically beneath the surface. Note that the rear margin of the flukes of this species, unlike that of the humpback whale, is smooth, broad, and concaved distinctly towards a deep fluke notch. (*Photos from the northern North Atlantic by K. C. Balcomb* [a-g] *and off northeastern Florida by N. Fain, courtesy of Marineland of Florida* [h].)

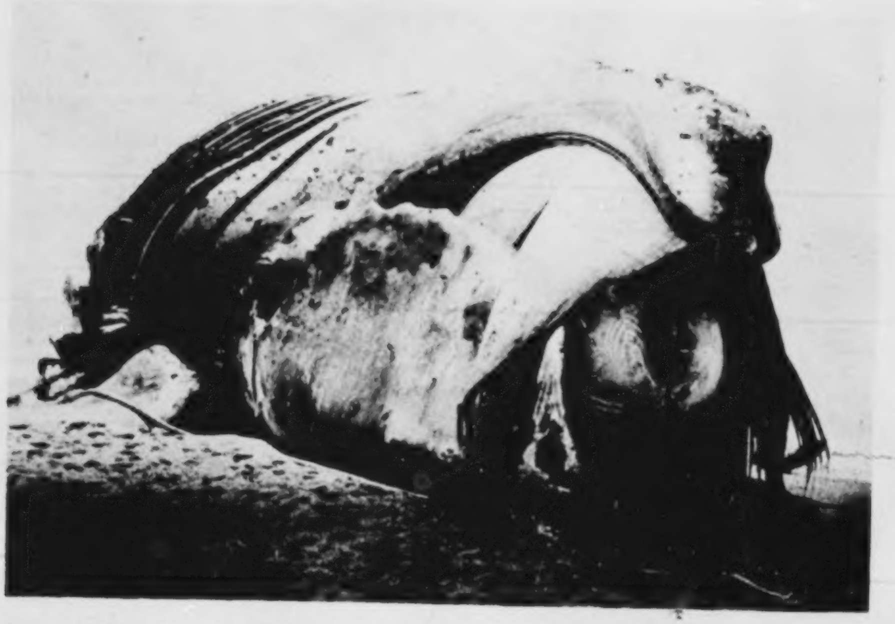


Figure 51.—A stranded right whale at Narragensett Bay, R.I. Note the narrow, highly arched lower jaw; the extremely long, narrow baleen plates, reaching lengths of 6.5 feet (2.0 m), or more; and the bonnet (the protuberance near the tip of the upper jaw). (*Photo from U.S. National Museum, courtesy of J. G. Mead.*)

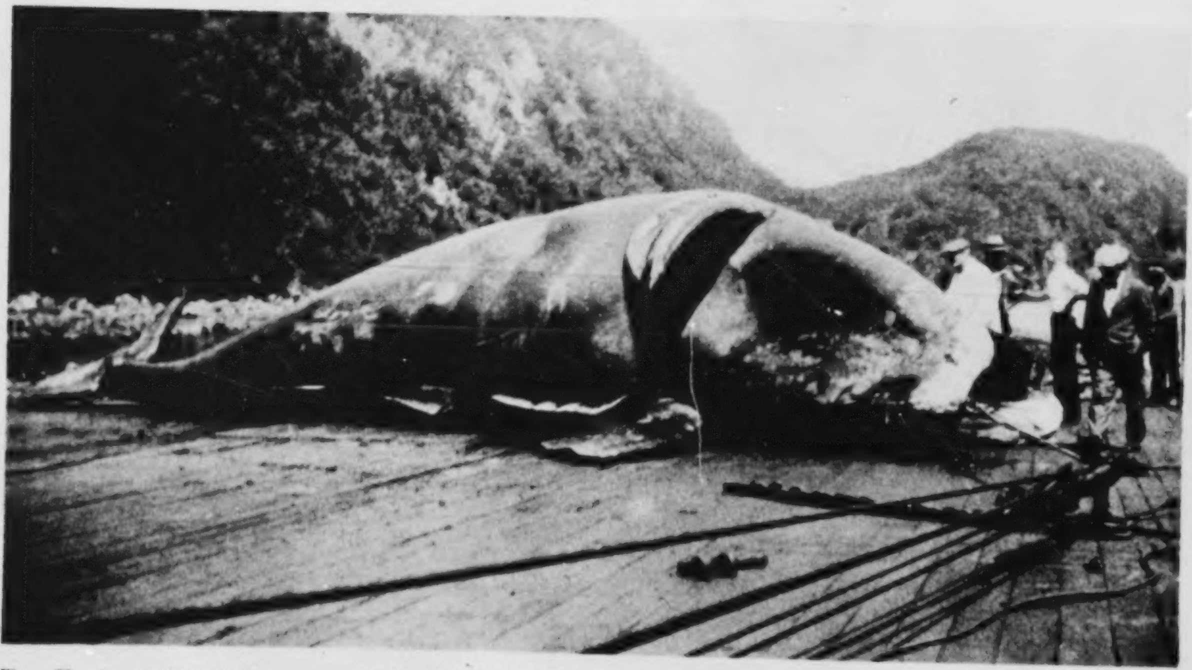


Figure 52.—A ventral view of a harpooned female right whale at Newfoundland. Note that this species, like the bowhead, lacks the series of ventral grooves which characterize all other baleen whales of the western North Atlantic. Note also the absence of the vest of white on the chin, a feature which is characteristic of the bowhead whale. Some right whales, however, do have extensive regions of white on the ventral surface, including the chin. (*Photo from U.S. National Museum, courtesy of J. G. Mead.*)

SPERM WHALE (T)

Physeter catodon Linnaeus 1758

Other Common Names

Cachalot, Sea Wap (St. Vincent).

Description

Male sperm whales have been reported to reach a length of 69 feet (20.9 m), though today individuals larger than 50 feet (15.2 m) are rare. Females are much smaller, rarely exceeding 38 feet (11.6 m).

A sperm whale is among the easiest of whales to identify at sea even when comparatively little of the animal is visible. It has a huge head, which comprises from a fourth to a third of the animal's total length. (The proportion is considerably higher for males than for females.) The blunted "squarish" snout, which may project up to 5 feet (1.5 m) beyond the tip of the lower jaw, houses a large reservoir containing a high-quality oil called spermaceti.

The single blowhole is located well to the left of the midline and far forward on the head. As a consequence the small bushy blow, usually less than 8 feet (2.4 m), emerges forward at a sharp angle from the head and towards the left. Under good wind conditions this feature alone may permit positive identification of sperm whales even at considerable distances.

Sperm whales have a distinct dorsal hump, usually rounded in its appearance about two-thirds of the way back from the tip of the snout. Immediately behind the hump is a series of knuckles or crenulations along the midline. This hump and the crenulations are clearly visible when the animals arch the tail before beginning a dive. There is a ventral keel, which may also be visible as animals "sound" (dive). The flukes of sperm whales are broad and triangular in shape, are not concaved, but are deeply notched on the rear margin.

Sperm whales usually are dark brownish gray in color. The body has a "corrugated" or "shriveled" appearance. The belly and the front of the head may be grayish to off-white. The skin around the mouth, particularly near the corners, is white. The undersides of the flukes and flippers vary in color through numerous shades of browns and brownish grays.

Natural History Notes

Sperm whales may dive to depths in excess of 3,270 feet (996.7 m) for periods of an hour or more. As do most whales upon surfacing from a deep dive, sperm whales emit a single explosive blow and then, depending on the length of the dive, may remain on the surface for over 10 min and blow more than 50 times before beginning the next dive. Shorter periods on the surface and fewer blows are more common. Females may dive and remain on the surface for shorter periods of time than males. When beginning a deep dive, sperm whales throw their broad triangular flukes, dark on the undersides, high into the air.

Sperm whales may be found singly or in groups of up to 35 or 40 individuals. Older males are usually solitary except during the breeding season. During the remainder of the year large groups may be bachelor bulls (sexually inactive males) or nursery schools containing females and juveniles of both sexes. Sperm whales are seldom found in less than 600 feet (182.9 m) of water.

Sperm whales feed primarily on squid but may occasionally also take octopuses and a variety of fishes.

May Be Confused With

Because of their distinctive head shape and blow, sperm whales are unlikely to be confused with any other species when they can be closely examined. If only the back and tail flukes are seen, however, sperm whales may somewhat resemble humpback whales. Both species arch the back when beginning a dive, raising the fin or hump, and both throw the tail flukes. The most distinctive differences between the two species are tabularized on p. 40.

At sea the head of a sperm whale may also somewhat resemble that of an adult male northern bottlenosed whale, but this latter species is lighter brown in color, has a distinct beak and a prominent dorsal fin, and is rarely found south of lat. 42°N. In addition, the blowhole of the northern bottlenosed whale is located well back on the head and not—as in the sperm whale—on the front.

Distribution

Sperm whales are widely distributed in oceanic areas of the western North Alantic. They may be encountered from Venezuela north at least as far as the Davis Straits, though they apparently avoid the polar ice fields. Distribution and migrations vary between males and females. Males range farther to the north, while females and immature males remain between lat. 30° and 50°N. Both groups shift northward during spring and summer and return to southern portions of their range in the fall. Adult males arrive off the New England coast in August. Those reaching the Newfoundland and Labrador coasts arrive from the deep sea, perhaps following the slope contours, in August and September. Males are abundant as far north as southeast Greenland and Iceland in summer. Some animals remain as late as November, but the majority migrate south to temperate or tropical waters in the early fall.

Historically the primary grounds in the western North Atlantic were those in all the following areas: the Grand Banks just southeast of the southern Grand Banks from lat. 30° to 40°N and long. 35° to 55°W, off the Carolinas, around the Bahamas, around many of the West Indies, and in the southwestern Caribbean.

Stranded Specimens

Stranded sperm whales should be easy to identify. The very narrow underslung jaw contains from 18 to 25 functional teeth, which fit into sockets in the upper jaw. The huge, distinctly box-shaped head and the position of the single blowhole to the left front of the head are unmistakable clues.

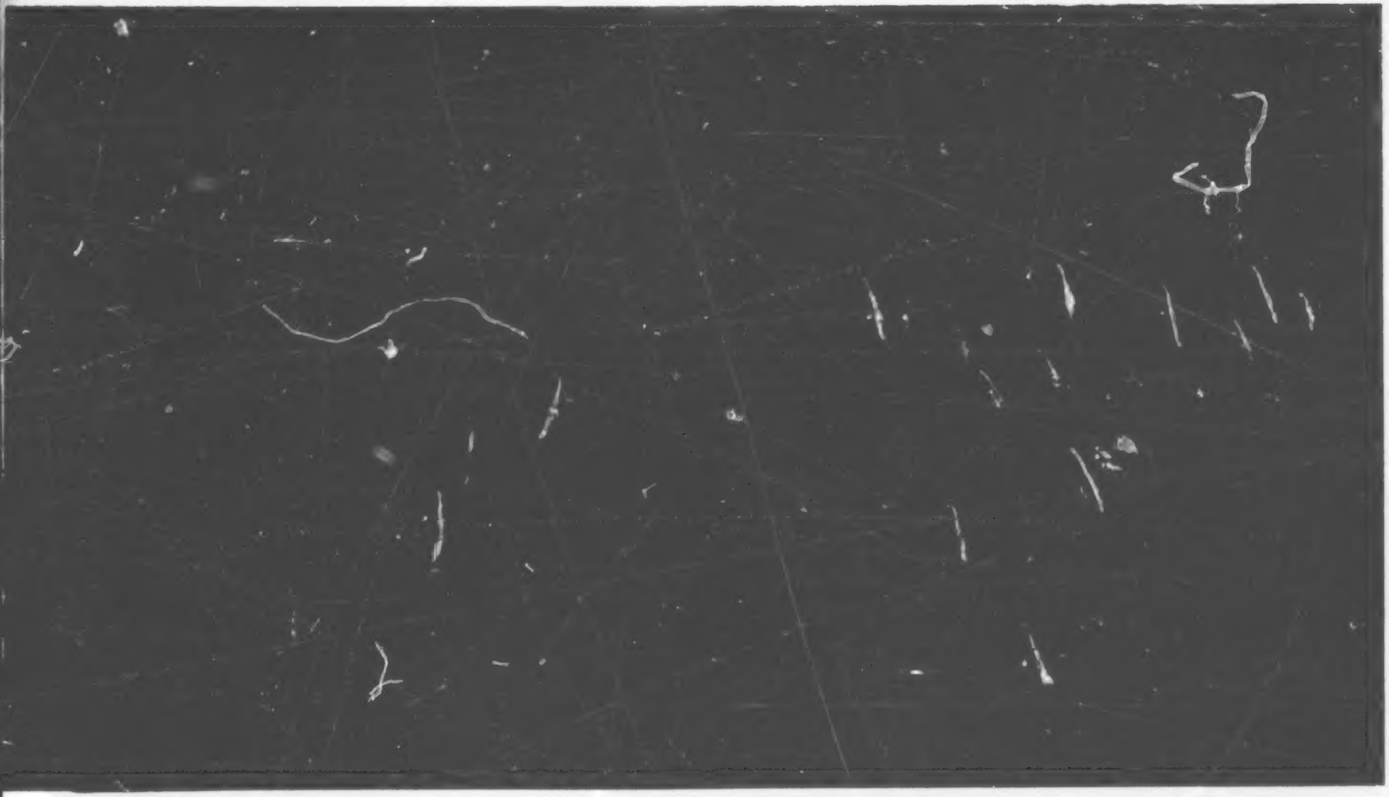


Figure 53. – An aerial view of 21 sperm whales, including two young calves and several large males, off Japan. Even from an aircraft, the position of the blowhole and the body shape clearly mark these animals as sperm whales. [*Photos by Suisan Koku Company, courtesy of T. Kasuya.*]

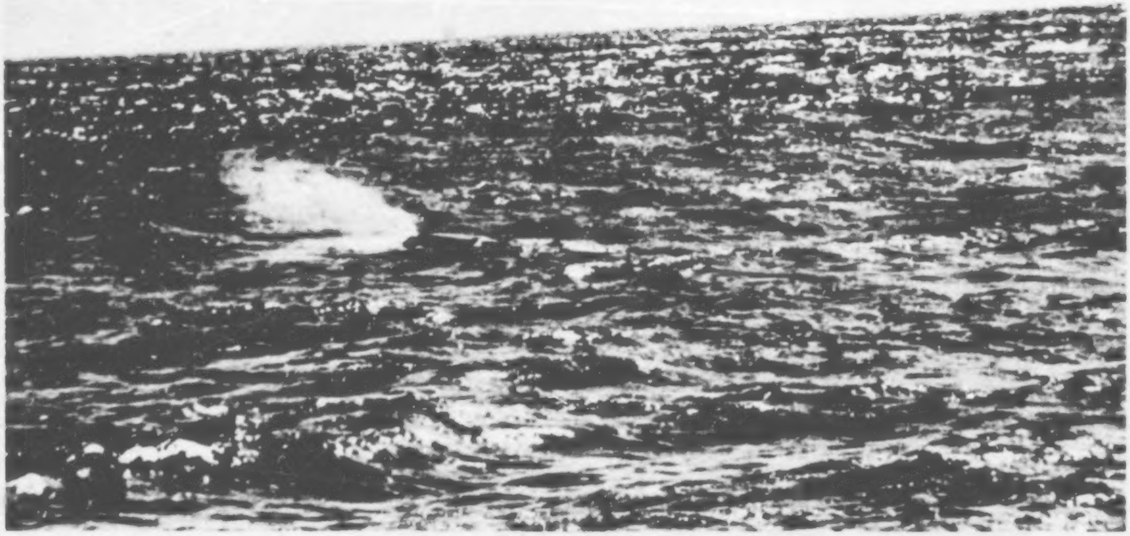


Figure 54. – A side view of a sperm whale in the West Indies, showing the distinctive blow. Note that the spout projects obliquely forward from the blowhole, which is displaced to the left front of the head. (*Photo by H. E. Winn.*)

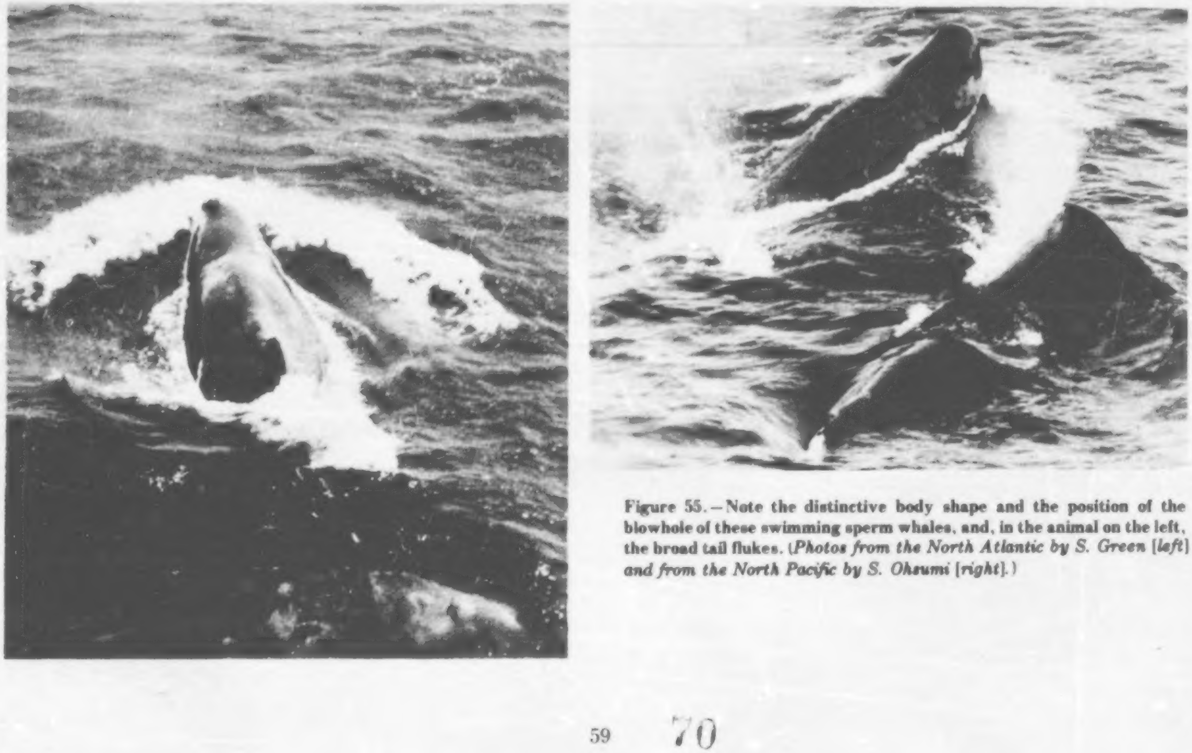


Figure 55. – Note the distinctive body shape and the position of the blowhole of these swimming sperm whales, and, in the animal on the left, the broad tail flukes. (*Photos from the North Atlantic by S. Green* [*left*] *and from the North Pacific by S. Ohsumi* [*right*].)

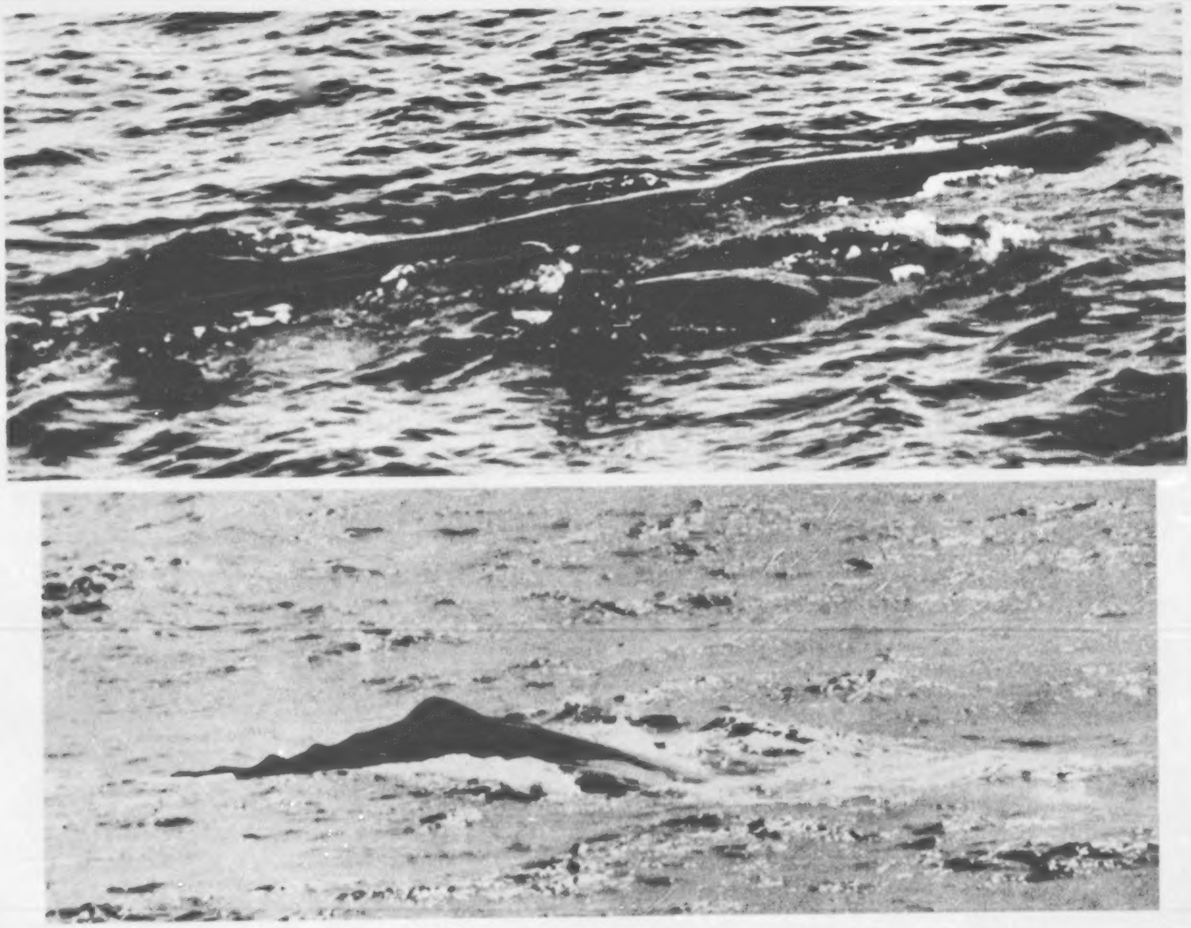


Figure 56. — A sperm whale mother and calf off Baja California, showing the distinct dorsal hump and the extremely long head. In the bottom photo, from the West Indies, note the dorsal hump and the crenulations of bumps which follow it. Both the hump and the crenulations may be visible as the animal arches its tail to begin a deep dive. Note also the wrinkled appearance of the body. (*Photo by K. C. Balcomb [top] and H. E. Winn [bottom].*)

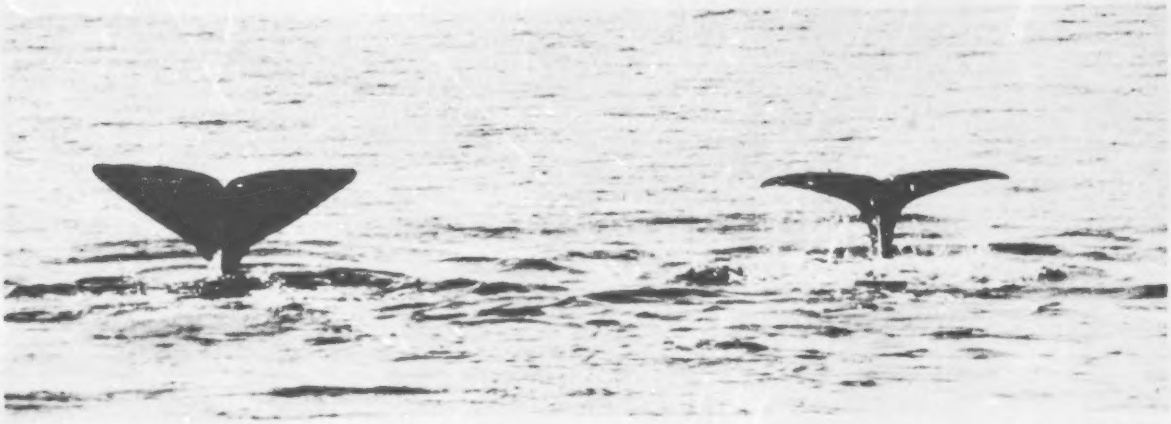


Figure 57. — Sperm whales often show their broad tail flukes as they begin long dives, which may last over an hour and take them to depths of several thousand feet or more. Note the smooth rear margin and the nearly triangular shape of the flukes. (*Photo from off Baja California by K. C. Balcomb.*)

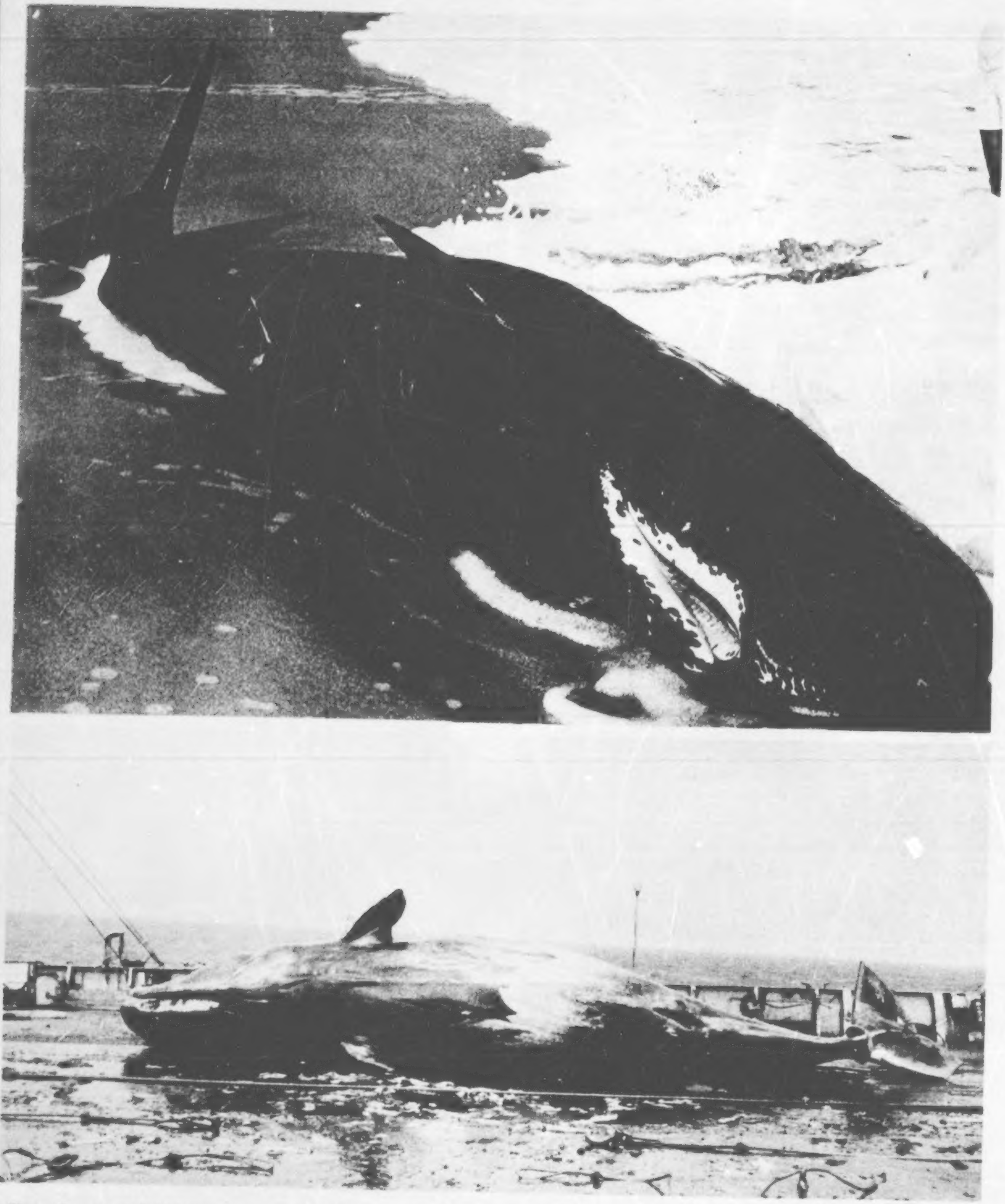
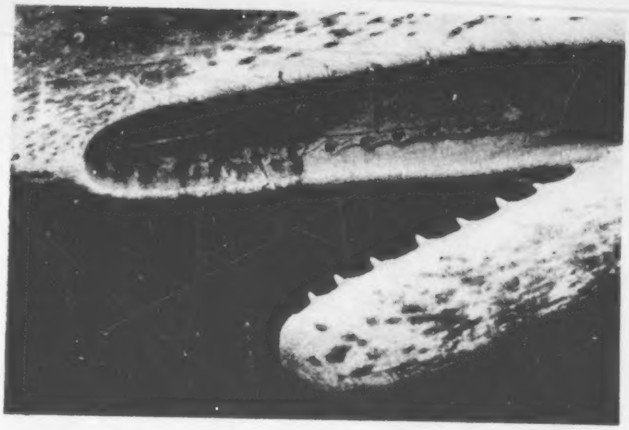


Figure 58. — A stranded infant male sperm whale at Melbourne Beach, Fla. (top) and a male adult sperm whale on the deck of a whaling ship in the Pacific (bottom). Note the bulging forehead, the narrow, underslung lower jaw, the white coloration around the mouth, particularly at the corners, and the wrinkled appearance of the body. In the bottom photo note also the whitish region on the belly. (*Photos by P. Winfield [top] and Japanese Whales Research Institute, courtesy of H. Omura [bottom].*)

Figure 59.—The narrow lower jaw of a sperm whale contains from 18 to 25 large functional teeth, which fit neatly into sockets in the upper jaw. Occasionally, the upper jaw also contains some teeth. (*Photo from the North Pacific by Japanese Whales Research Institute, courtesy of H. Omura.*)



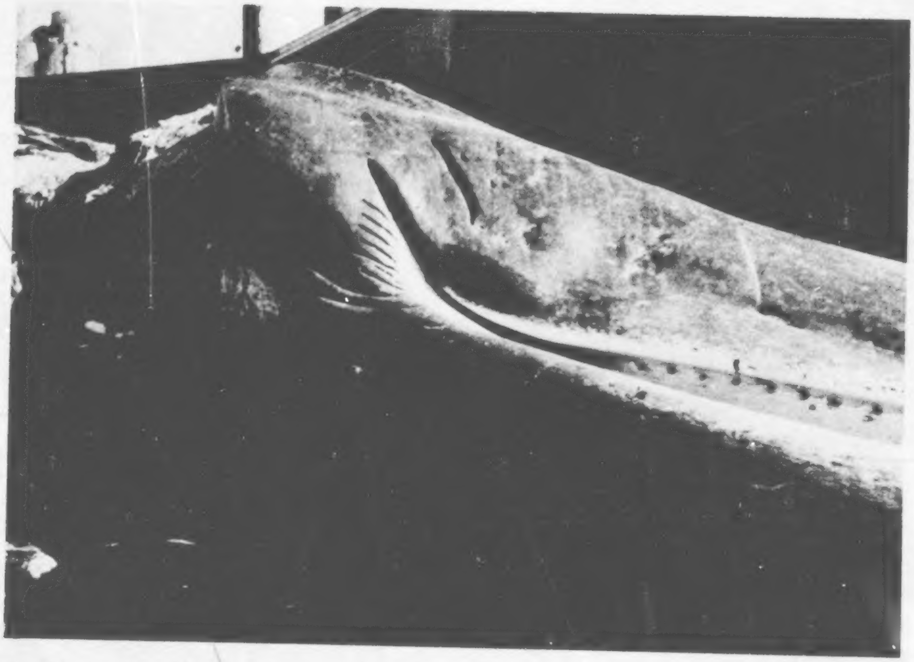


Figure 60.—The throat and lower jaw of a sperm whale on the deck of an eastern Canadian whaling station, showing the numerous short throat grooves, which are most clearly evident on adult animals. (*Photo by J. G. Mead.*)

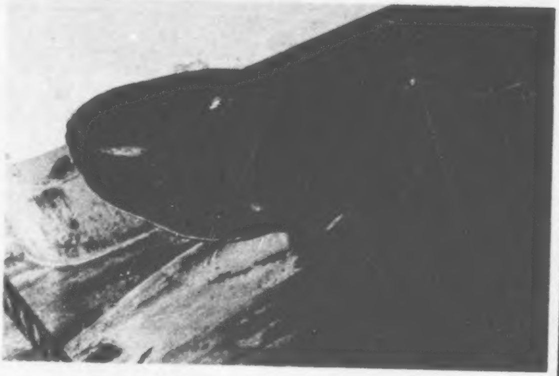


Figure 61.—Detail of the broad, paddle-shaped flipper of a sperm whale from the North Pacific. (*Photo from Japanese Whales Research Institute, courtesy of H. Omura.*)

MINKE WHALE (B)

Balaenoptera acutorostrata Lacépède 1804

Other Common Names

Little piked whale, lesser rorqual, little finner, sharp-headed finner, grampus (Newfoundland), gibord (Quebec).

Description

Minke whales are the smallest baleen whale species in the northern hemisphere, reaching maximum lengths of just over 30 feet (9.1 m). One of the most distinctive features of this species is an extremely narrow, pointed, distinctly triangular rostrum with a single head ridge, similar to but much sharper than that of the fin whale (hence the common name "sharp-headed finner"). Minke whales have a tall, falcate dorsal fin located in the latter third of the back, in about the same position as that of the sei whale, which often becomes visible simultaneously with the low, usually inconspicuous blow.

Minke whales are black to dark gray on the back and white on the belly and on the underside of the flippers. Portions of the underside of the flukes may be steel bluish gray. They have a diagonal band of white on each flipper, the extent and orientation of which varies individually.

Like the fin whale, minke whales (at least from the Pacific) sometimes have a chevron on the back behind the head and often have two regions of lightish-gray coloration on each side—one just above and behind the flippers; another just in front of and below the dorsal fin. These patches may be quite conspicuous on some animals, indetectable on others. These markings may also be present on Atlantic specimens, though they have not yet been documented. The baleen, which may be visible from close range when the animal is feeding, is mostly yellowish white with fine white bristles. The posterior plates (up to half) may be brown to black.

Natural History Notes

Minke whales are frequently found as single animals, pairs, or trios, though they may congregate in areas of food concentration in the northern seas during the spring and summer. They are more likely to be seen up close than their larger cousins—the blue, fin, and sei whales—because they often closely approach boats, particularly stationary boats, as if curious about them.

Minke whales may also approach very close to shore and often enter bays, inlets, and estuaries.

Like fin whales, they often arch the tail stock high into the air when beginning a long dive. However, they do not raise the flukes above the surface when beginning a dive.

Minke whales feed primarily on small shoal fish (herring, cod, pollack, and capelin).

Minkes sometimes breach, leaping completely clear of the water and entering smoothly, head first, or with a substantial splash like humpback whales.

May Be Confused With

When they are seen at relatively close range, minke whales can be readily distinguished from the other rorquals that have relatively tall, falcate dorsal fins (fin, sei, and Bryde's whales) by their considerably smaller size and by their distinctive white band on each flipper.

At a distance, however, positive identification may be difficult. Minke whales have a small, low, inconspicuous blow. Like sei whales, they frequently expose the dorsal fin simultaneously with the blow, but minke whales hump the tail stock much higher when beginning a long dive—more like fin whales.

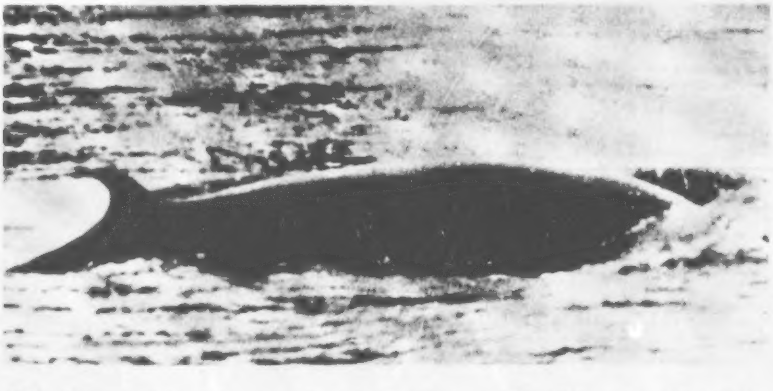


Figure 62.—The minke whale, at a maximum length of just over 30 feet (9.1 m), the smallest baleen whale species of the western North Atlantic, is distributed in polar, temperate, and tropical waters. These animals usually have a low, inconspicuous blow and are sometimes curious enough about boats that they will alter their course to investigate them. Note the two areas of light gray on the sides of the body, characteristic of at least Pacific minke whales. (*Photo from off British Columbia, courtesy of* Nanaimo Free Press.)

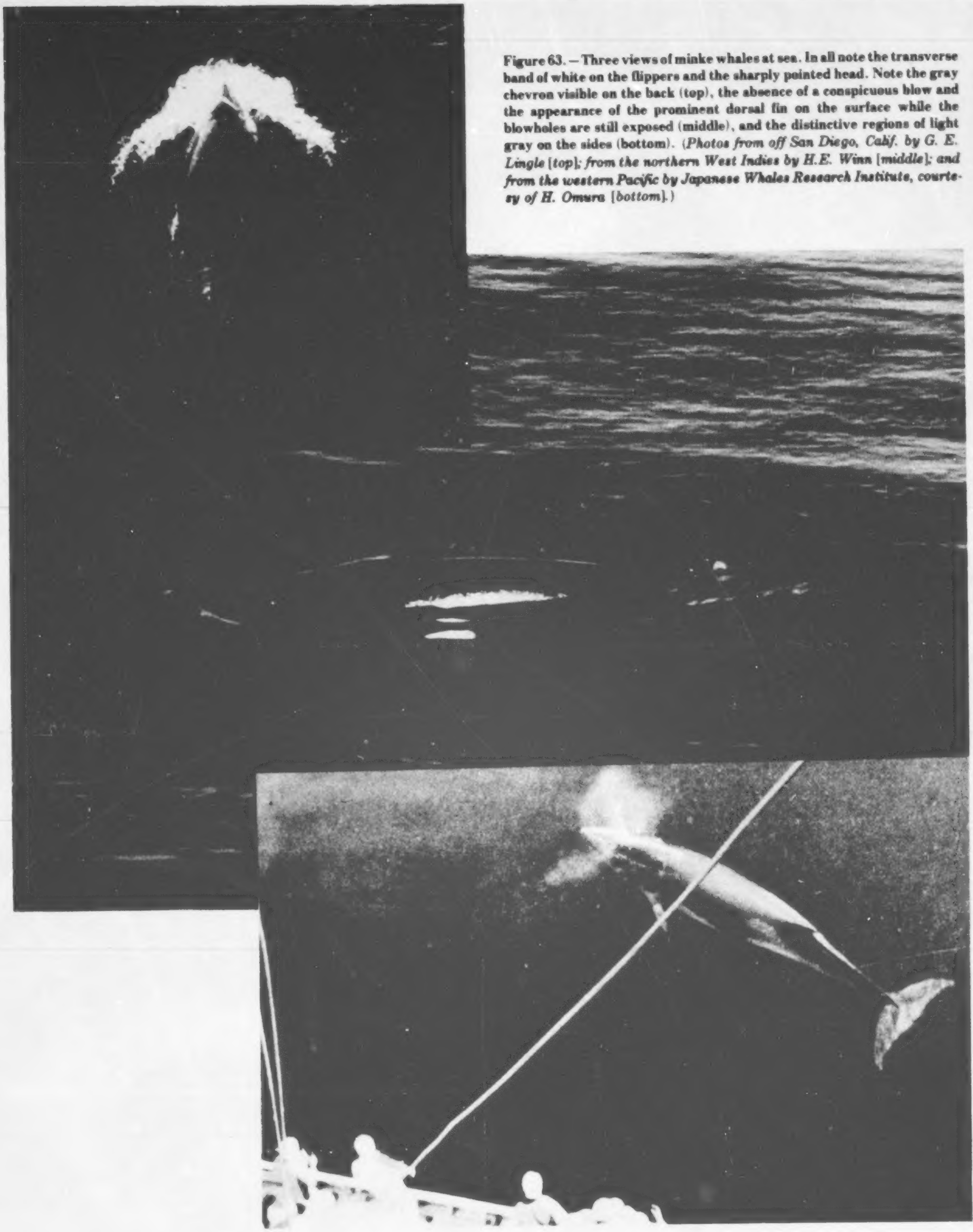


Figure 63. — Three views of minke whales at sea. In all note the transverse band of white on the flippers and the sharply pointed head. Note the gray chevron visible on the back (top), the absence of a conspicuous blow and the appearance of the prominent dorsal fin on the surface while the blowholes are still exposed (middle), and the distinctive regions of light gray on the sides (bottom). (*Photos from off San Diego, Calif. by G. E. Lingle* [*top*]*; from the northern West Indies by H.E. Winn* [*middle*]*; and from the western Pacific by Japanese Whales Research Institute, courtesy of H. Omura* [*bottom*].)

From a distance, minke whales might also be mistaken for northern bottlenosed whales (or any of several other beaked whales with a similar dorsal fin). They can be distinguished by the differences in head shape, body color and markings, and behavior, detailed on p. 67.

Distribution

Minke whales are distributed in the polar, temperate, and tropical waters of the western North Atlantic. They are found from the pack ice south to at least Anguilla, Lesser Antilles, and the eastern Gulf of Mexico, though they appear to be most abundant in temperate waters north of the latitude of New York and are infrequently reported from tropical waters. At least some of the population migrates to the northern portions of their range in spring and back south in autumn. They often approach close to shore and enter river mouths, inlets, and estuaries.

Minke whales arrive along the Canadian coast in May or June. Some migrate as far north as Hudson Strait, where they remain until the freeze in October, November, or December. By December the majority of the population has begun to move to the south, although some animals remain behind so long as to become entrapped in the ice and die. Spring and summer concentrations along the Canadian coast correspond to concentrations of capelin, cod, and herring. Southern concentrations, also corresponding with concentrations of herring, extend farther offshore at least to the edges of the Grand Bank. Minke whales also summer off the south coast of western Greenland, which they probably reach from waters southwest of Iceland. Minke whales also occur in deep pelagic waters.

Stranded Specimens

Stranded minke whales can be most readily identified by: 1) their small size (to just over 30 feet [9.1 m]); 2) the transverse white bands on the flippers; 3) the yellowish-white baleen plates (up to half the posteriormost plates may be brown or black), 300-325 per side in number and having fine white bristles (the plates are up to 4.75 inches [12 cm] wide at the base and up to 8 inches [20.3 cm] long); and 4) by the 50-70 thin ventral grooves, ending well before the navel, often just even with the flippers.

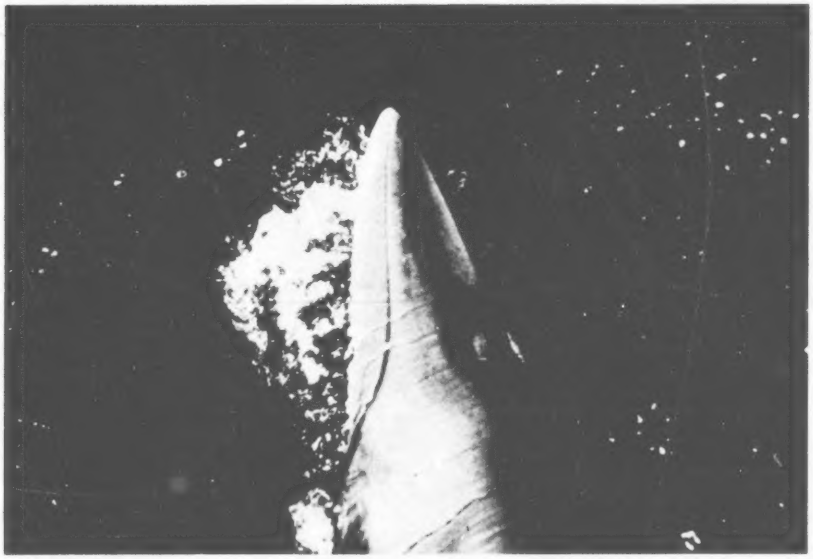


Figure 64. — Minke whales are also known as sharp-headed finners. On this animal from the North Pacific, note the sharply pointed head and the single central head ridge. (*Photo by Japanese Whales Research Institute, courtesy of H. Omura.*)

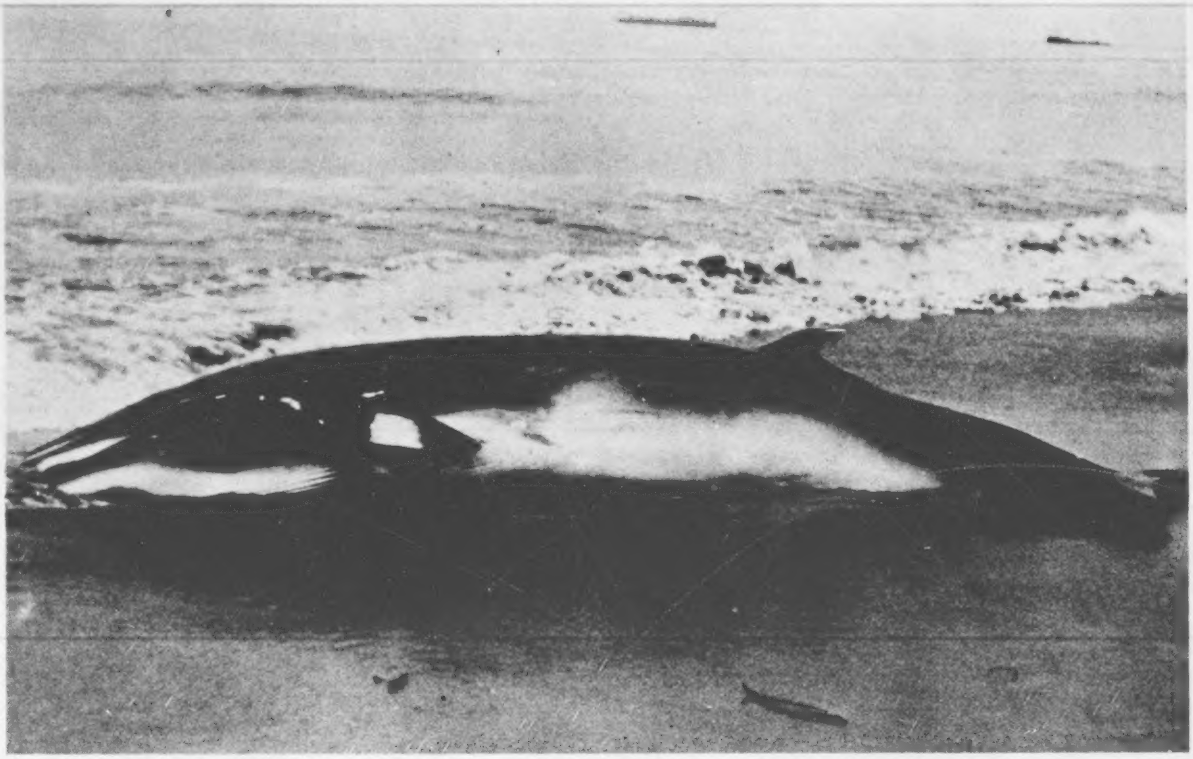


Figure 65. – A minke whale stranded at Santa Barbara, Calif. Note the dark back, the white-banded flipper, and the 60-70 fine ventral grooves extending to just behind the flippers. The short, white baleen plates are visible in the open mouth. (*Photo by S. Anderson.*)

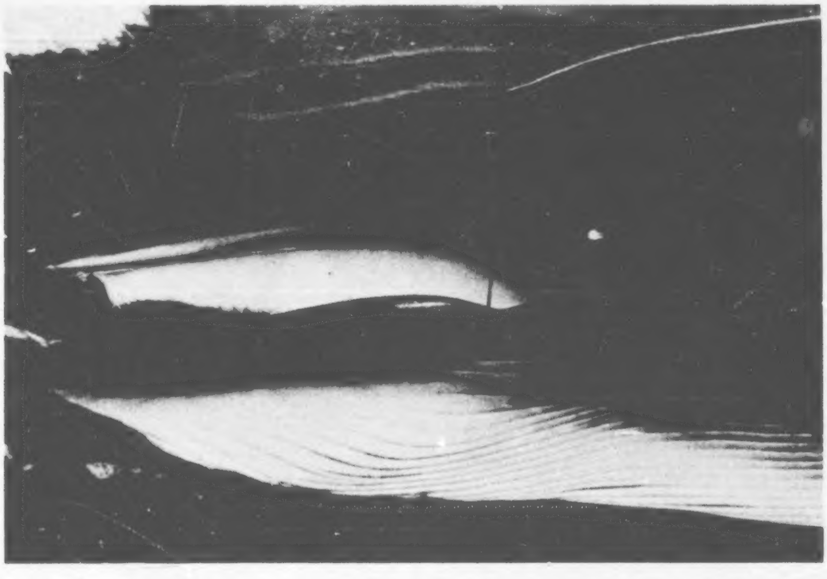


Figure 66. – Minke whales have from 300 to 325 short, yellowish-white baleen plates (up to half the anteriormost plates may be brown or black) with fine white bristles on each upper jaw. (*Photo from Santa Barbara, Calif. by S. Anderson.*)

77

NORTHERN BOTTLENOSED WHALE (T)

Hyperoodon ampullatus (Forster 1770)

Other Common Names

None known.

Description

Northern bottlenosed whales reach a length of 32 feet (9.8 m) and are robust in form. They are characterized by a bulbous forehead, which is more pronounced on larger animals and most distinctive in adult males, and by the dolphinlike beak displayed in animals of all sizes and ages, which is sometimes visible as the animals surface steeply to breathe.

The blowhole is located in an indented area behind the bulbous forehead, and the blow emanating from it projects upward or slightly forward to a height of up to 6 feet (1.8 m), is bushy and is visible from a considerable distance under low wind conditions. The dorsal fin, located two-thirds of the way back on the back, reaches at least 12 inches (30.5 cm) in height and is distinctly falcate. The dorsal fin may be visible from a distance of several hundred meters.

Northern bottlenosed whales are usually brownish in color, though the markings change with age. Smaller animals are a uniform chocolate brown. Larger animals retain the chocolate brown color on the back but are often lighter on the sides and the belly and often have irregular patches or blotches of grayish-white coloration on the back and sides. Extremely large animals, presumably older males, often have a white head. The flippers and the undersides of the flukes are uniformly brown in color.

Natural History Notes

Northern bottlenosed whales often form tightly packed groups of up to 10 or more animals. This species holds the anecdotal record for the longest dives, having been reported by early whalers to remain submerged over 2 h. They are probably deep divers, feeding primarily on squid (though they may take fishes as well), and they rarely go in water shallower than 100 fathoms (183 m).

After a long dive, northern bottlenosed whales will sometimes remain on the surface for 10 min or more, blowing at regular intervals before making another dive. After the last blow of a series or when the animals are startled by a boat, they may show the tail flukes as they begin to dive. The flukes are not notched on the rear margin.

Northern bottlenosed whales have been observed to show curiosity about boats, coming to them from a considerable distance. They have also been observed to "lobtail," raising the tail flukes above the water and slapping them against the surface, and to jump clear of the water.

In the late 19th century, after stocks of bowhead whales were severely reduced by overwhaling, northern bottlenosed whales became a prime target of arctic whalers. They were sought because in addition to whale oil produced from the body blubber, the forehead of the species yielded quantities of spermaceti like that obtained from sperm whales.

May Be Confused With

Northern bottlenosed whales have a northerly and deep-water distribution. Within their range, they may be confused at a distance with minke whales, with sperm whales, or perhaps with North Sea beaked whales.

Minke whales (p. 63) have a falcate dorsal fin located in approximately the same position as that of the northern bottlenosed whale. However, minke whales have a flathead in front of their two blow holes and are black to dark gray on the back.

Sperm whales (p. 57) have a squarish head that may somewhat resemble that of an adult male northern bottlenosed whale. However, there are numerous characteristics which will permit these species to be distinguished even from a distance:

Northern Bottlenosed Whale	**Sperm Whale**
BLOW	
Low and bushy; projects upward from indentation on top of head.	Low and bushy; projects obliquely forward from left side of head; usually less than 8 feet (2.4 m).
COLORATION	
Lighter brown; adults splotched with grayish white; body smooth.	Brownish gray; body appears wrinkled.
FLUKES	
Rarely notched; seldom raised on long dive.	Notched; raised on long dive.
HEAD	
Tapering in younger animals; bulbous in adults; white in older animals; beaked.	Squarish, long, all black; beakless.

A further aid to distinguishing northern bottlenosed and sperm whales at sea is the fact that the sperm whales that are found in areas where northern bottlenosed whales are encountered are usually older, larger males from 40 to 60 feet (12.2 to 18.3 m) long. Northern bottlenosed whales do not exceed 32 feet (9.8 m).

Northern bottlenosed whales may also be confused with the poorly known North Sea beaked whale (p. 82). When they can be examined at close range, however, northern bottlenosed whales should be distinguishable on the basis of the distinctly bulbous forehead.

Distribution

In the western North Atlantic, northern bottlenosed whales are restricted to Arctic and north temperate waters,

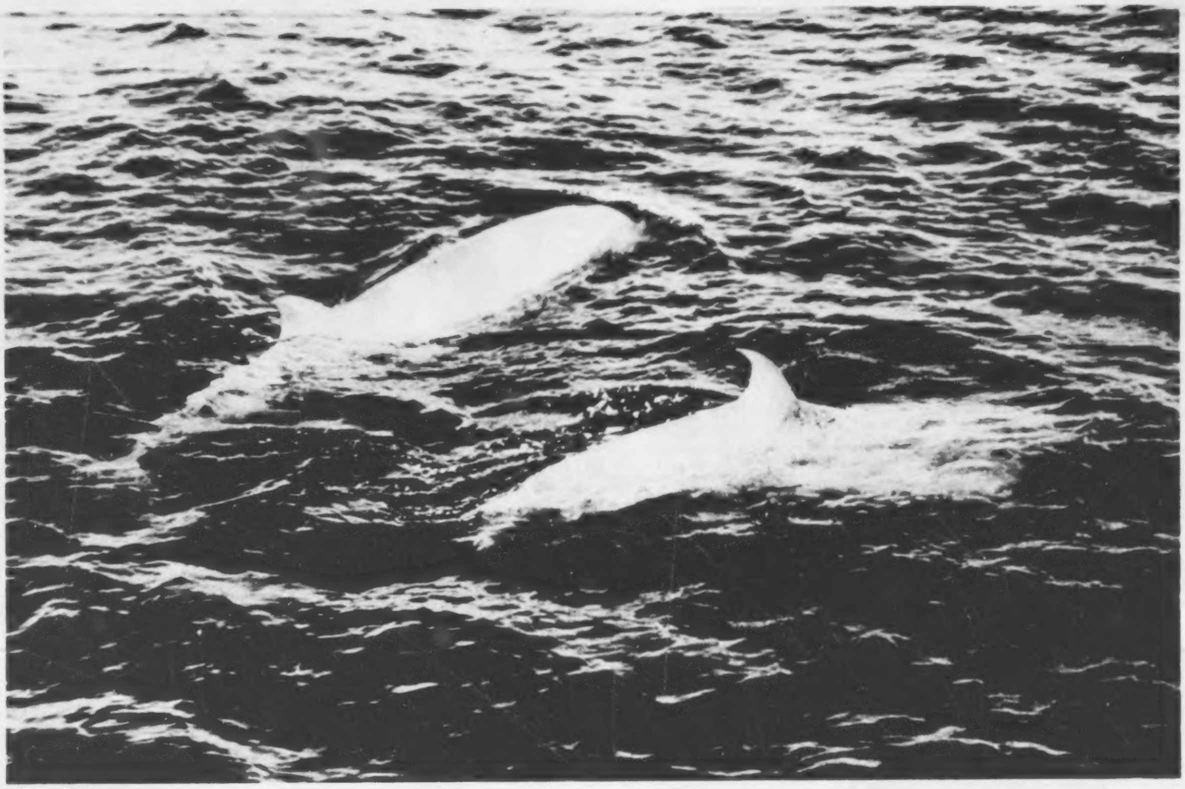


Figure 67. – Northern bottlenosed whales at sea off Nova Scotia. Note the prominent dorsal fin and the blotches of grayish-white coloration on the body. Northern bottlenosed whales reach 32 feet (9.8 m) in overall length. (*Photo by H. E. Winn.*)

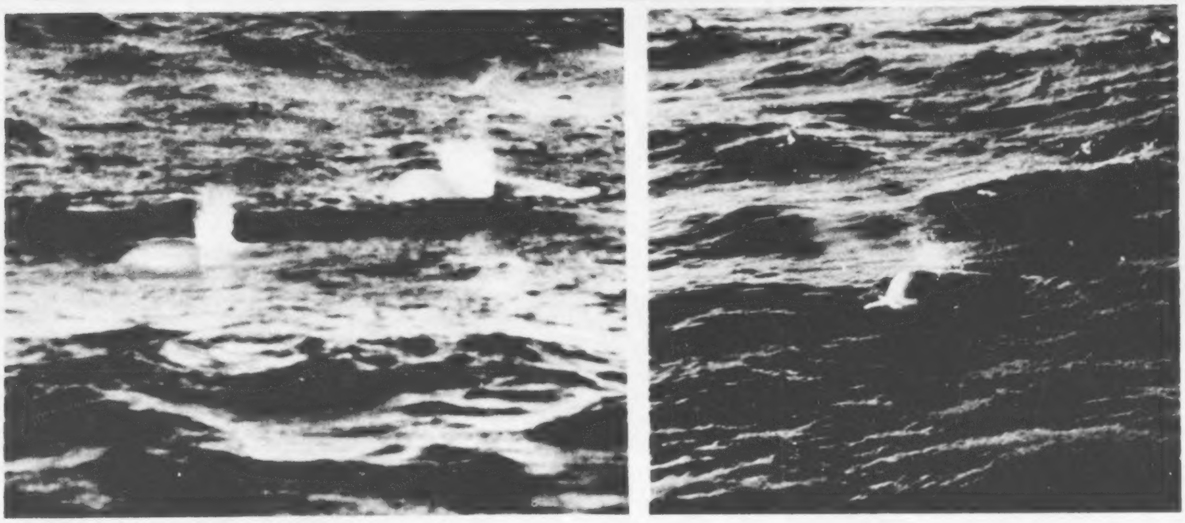


Figure 68. – Views of the heads of male northern bottlenosed whales off Nova Scotia. Note the distinctive beak (right) and the bulbous forehead, features which develop with age and are most pronounced in adult males. In the animal on the left, note also the low bushy blow emanating from the indented area on the top of the head. (*Photos by H. E. Winn.*)

where they most commonly occur in offshore areas. They have been reported from Davis Straits and the entrance to Hudson Strait, the Gully southeast of Sable Island, and as far south as Narragansett Bay, R.I.

In the spring and summer they concentrate near the northern limits of their range, occasionally visiting deep channels of the Gulf of St. Lawrence and eastern Newfoundland in summer. During these seasons they may extend to the edge of the pack ice.

In the fall and winter the bulk of the population migrates southward. Many probably winter in the Labrador Sea while others move farther southward and farther offshore.

Stranded Specimens

Like the beaked whales discussed on p. 70 through 83, the northern bottlenosed whales have no notch in the tail flukes, have two throat grooves forming a V-shape on the chin, and have only two teeth in the lower jaw, with those teeth emerged from the gums only in adult males. These teeth may have sometimes fallen out of older males, but the tooth sockets should still be visible in the gums.

NOTE: Some specimens—both male and female—will be found to have a series of vestigial teeth the size of toothpicks in the upper and/or lower jaws. Similar vestigial teeth, 5-40 in number, sometimes occur in goosebeaked whales (p. 70). Further when they are prepared for museum collections, the lower jaws of adult northern bottlenosed whales may be found to contain a second pair of teeth just behind the first.

Northern bottlenosed whales may be distinguished from the remainder of the beaked whale family, however, by the extremely robust body, by the bulbous forehead, which is more extensively developed in larger animals, particularly males, and by the pronounced dolphinlike beak.

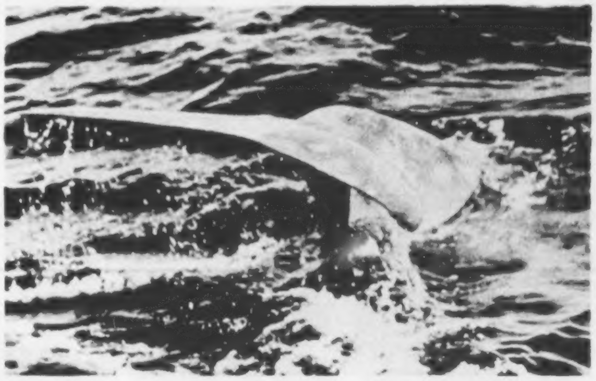


Figure 69.—Northern bottlenosed whales occasionally raise their tail flukes when beginning a dive. At close range, these flukes can often be seen to lack a distinctive notch on the rear margin. (*Photo from off Nova Scotia by J. Hain.*)

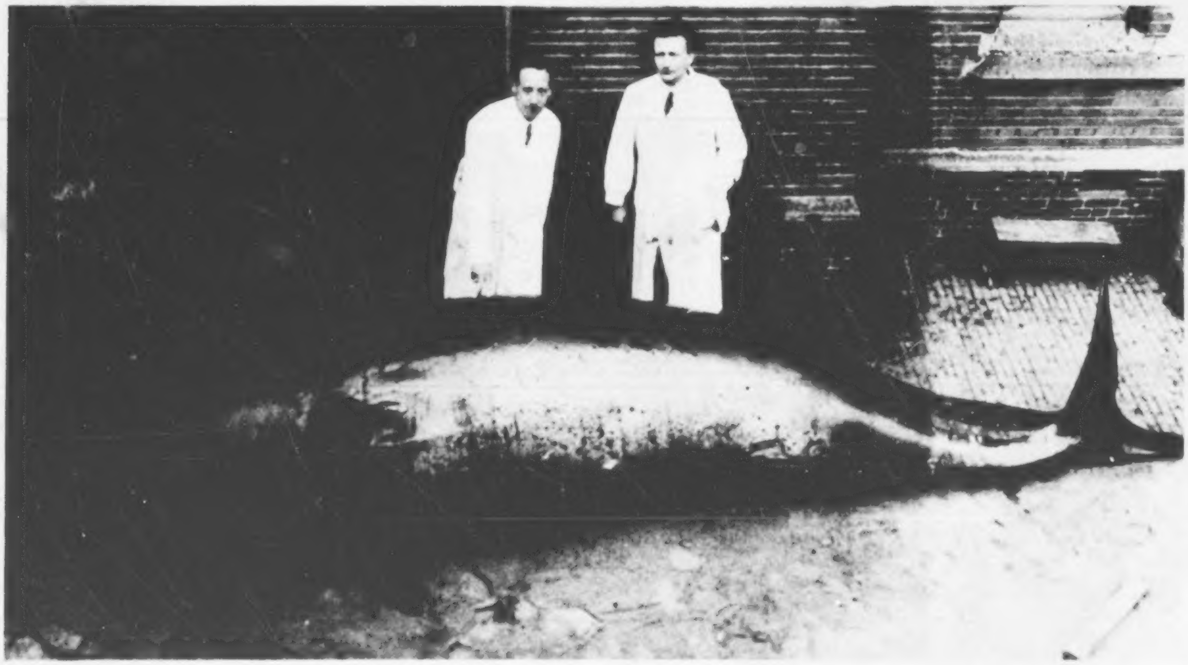


Figure 70.—A stranded northern bottlenosed whale from Holland. Note the bulbous forehead, the long dolphinlike beak and the frequent absences of a notch in the rear margin of the tail flukes. (*Photo by J. P. Strijbos, courtesy of Rijks Museum van Natuurlijke Historie te Leiden.*)

GOOSEBEAKED WHALE (T)

Ziphius cavirostris G. Cuvier 1823

Other Common Names

Ziphius, Cuvier's beaked whale, grampus (St. Vincent) (see also p. 96).

Description

Goosebeaked whales reach a length of 23 feet (7 m). Females are slightly larger than males of the same age. Calves are probably less than about 6 feet (1.8 m) at birth. The head is small relative to the body length and, when viewed laterally, is slightly concaved or scooped on the upper margin. The cleft of the mouth is small, smaller than in any other species of beaked whales. The beak is indistinct in larger individuals. There is a distinct indentation on the back behind the head. Two teeth are found at the tip of the lower jaw of adult males only.

The dorsal fin is relatively tall and distinct, to at least 15 inches (38.1 cm), smoothly falcate, and located well behind the midpoint of the back. The blowhole is located far forward on the top of the head. The blow, which may project slightly forward and slightly off to the left, is usually low and inconspicuous. Though the first blow after a long dive may be more distinct, even it is rarely visible even under good wind conditions for more than a few hundred yards.

Descriptions of the color pattern vary. Individuals may be dark rust brown, slate gray, or fawn colored on the back and generally lighter on the belly. Some appear dark in both regions, still others—particularly youngsters—appear lighter gray or tan on the belly. The body is frequently covered with white or cream-colored blotches (particularly on the belly). The tail flukes are dark on the bottom. The head is frequently paler in color. Old males have a distinct white head and are frequently extensively scarred.

Natural History Notes

Goosebeaked whales frequently occur in groups of from 10 to as many as 25 individuals. They have been reported to jump clear of the water. They are presumably deep divers and are known to stay down for more than 30 min. When they begin a deep dive, they often raise their tail flukes above the surface and dive nearly vertically. Goosebeaked whales feed primarily on squid.

May Be Confused With

So little is known of the external appearance and behavior of the living beaked whales at sea that all the species may easily be confused.

Goosebeaked whales are larger than all other beaked whale species with the exception of the northern bottlenosed whale. Upon close examination they may be distinguished from the northern bottlenosed whale by the lighter coloration of the head, reaching an extreme in the white head of adult males. (See p. 67 and Fig. 75.)

Distribution

As with other species of beaked whales seldom encountered or at least seldom positively identified at sea, the distribution of goosebeaked whales is poorly known and must be constructed from records of stranded specimens. Such records, often involving sick individuals that may have washed ashore from considerable distances, may give an inaccurate picture of normal ranges.

In general, stranding reports suggest that goosebeaked whales are sparsely but widely distributed in nonpolar latitudes. They appear to be primarily tropical in distribution, though they venture into temperate areas in summer. They have been reported from Massachusetts and Rhode Island south to Florida and thence to the islands of the West Indies. They are frequently stranded along the Florida coast and are not an uncommon species in the extant whale fishery of the Antillean Islands. The fact that goosebeaked whales strand more frequently than other beaked whales may reflect either a greater abundance or a greater tendency to approach close to shore.

They are probably primarily an offshore species.

Stranded Specimens

To be positively identified, stranded goosebeaked whales in an advanced state of decomposition may require museum preparation and examination of the skull and teeth. Fresh specimens may be tentatively identified by the characters illustrated in the figures.

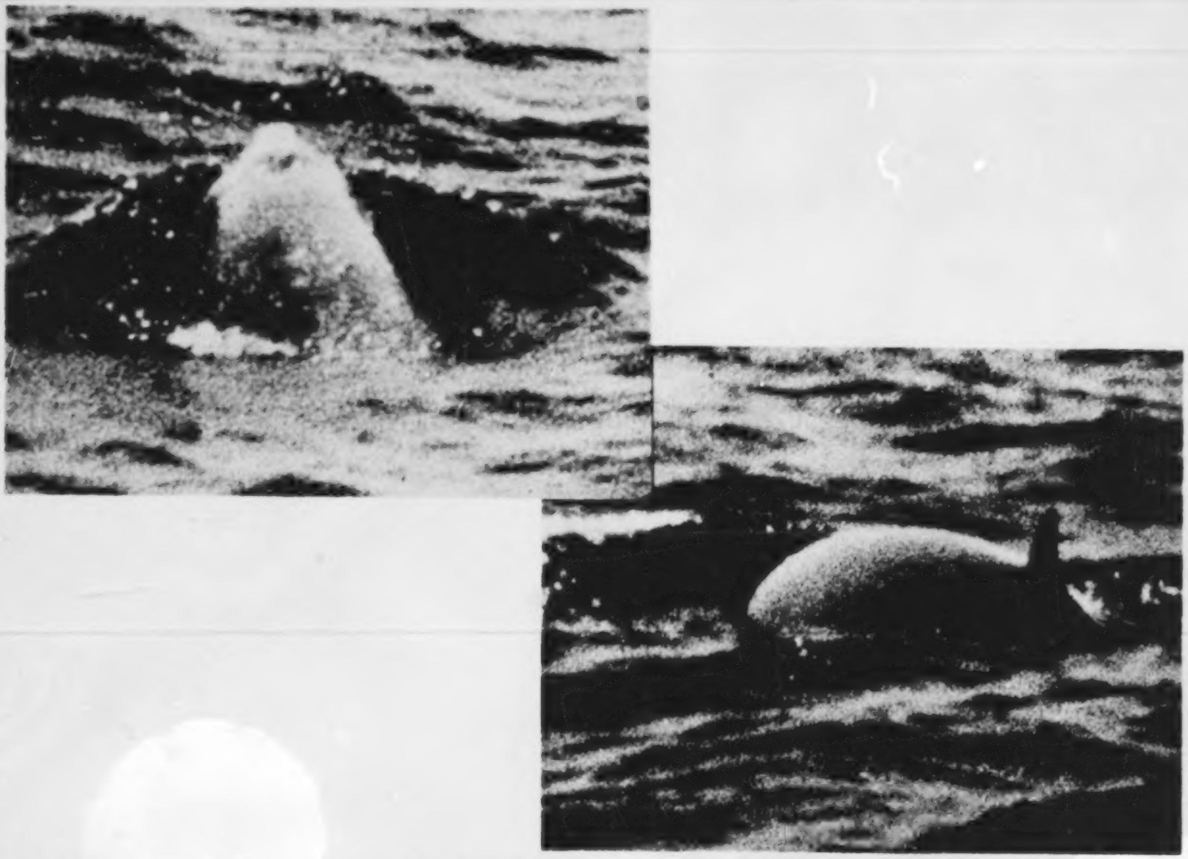


Figure 71.—Goosebeaked whales have been rarely seen at sea. In these photos from the eastern tropical Pacific, note the white head of the animal on the left. Goosebeaked whales are wary of boats and may dive for 30 min or more. When they surface, their blow, usually very indistinct, may project forward and slightly to the left. (*Photos by K. D. Sexton, courtesy of National Marine Fisheries Service.*)

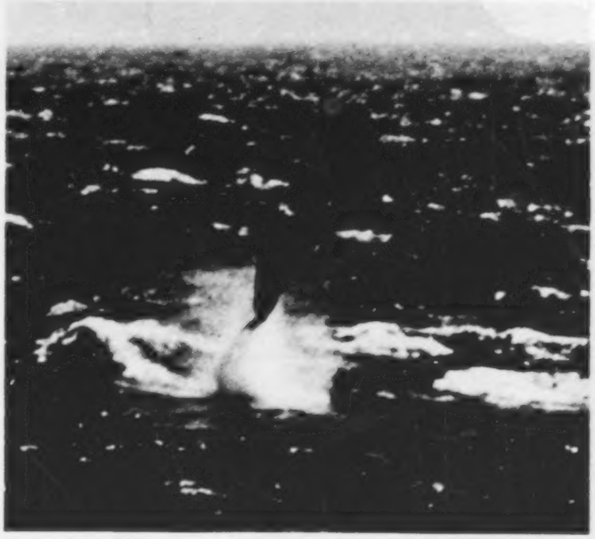


Figure 72.—A beaked whale, probably a goosebeaked whale, jumps beside a research ship off northwestern Baja California. Note the position and shape of the dorsal fin and the depression just behind the head. (*Photo by S. Leatherwood.*)

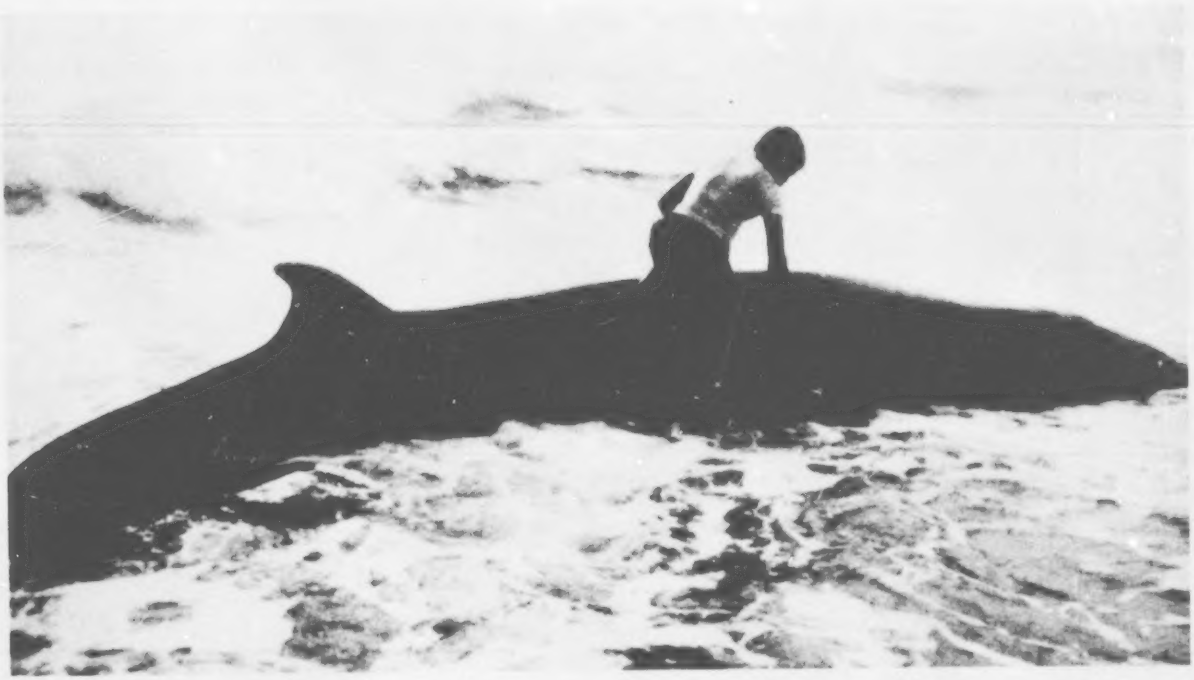


Figure 73. – A goosebeaked whale stranded in Delaware. Goosebeaked whales are primarily tropical in distribution, though they apparently venture into temperate areas in summer. Note the prominent dorsal fin, the lighter coloration of the head, and the depression just behind the head. (*Photo from U.S. National Museum, courtesy of J. G. Mead.*)

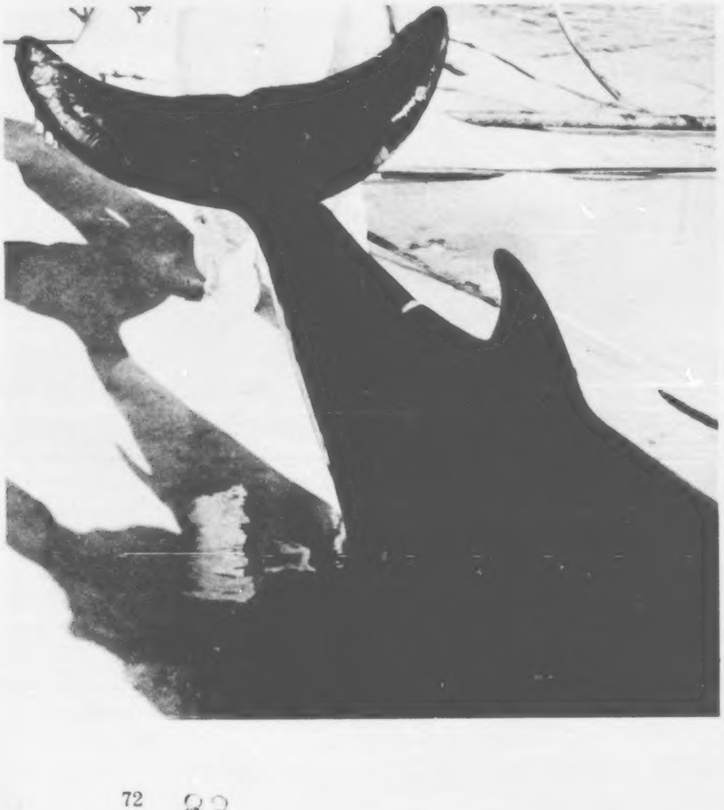


Figure 74. – A closeup of the dorsal surface of the flukes of a juvenile goosebeaked whale stranded in the northeastern Gulf of Mexico. Like other members of the beaked whale family, goosebeaked whales lack a distinctive notch in the rear margin of the flukes. (*Photo courtesy of Florida's Gulfarium.*)

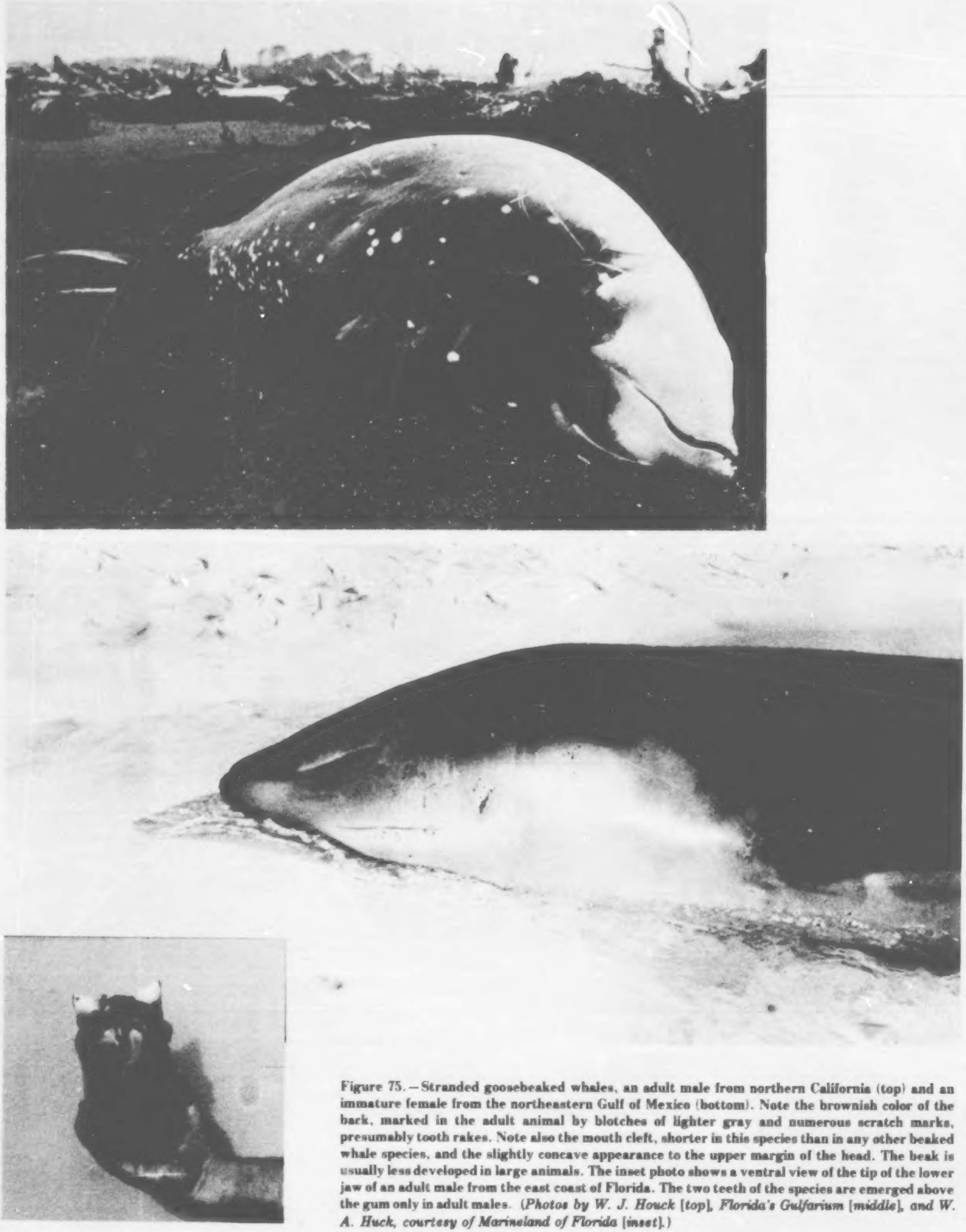


Figure 75. – Stranded goosebeaked whales, an adult male from northern California (top) and an immature female from the northeastern Gulf of Mexico (bottom). Note the brownish color of the back, marked in the adult animal by blotches of lighter gray and numerous scratch marks, presumably tooth rakes. Note also the mouth cleft, shorter in this species than in any other beaked whale species, and the slightly concave appearance to the upper margin of the head. The beak is usually less developed in large animals. The inset photo shows a ventral view of the tip of the lower jaw of an adult male from the east coast of Florida. The two teeth of the species are emerged above the gum only in adult males. (*Photos by W. J. Houck [top], Florida's Gulfarium [middle], and W. A. Huck, courtesy of Marineland of Florida [inset].*)

OTHER BEAKED WHALES (T)

Mesoplodon spp.

Other Common Names

Grampus (St. Vincent) (see also p. 96).

Description

In addition to the northern bottlenosed whale (p. 67) and the goosebeaked whale (p. 70), four other species of beaked whales have been reported from the western North Atlantic. All four species are known primarily from stranded specimens and have been rarely encountered at sea. Therefore statements of range are usually limited to inferences from locations of strandings, and information on appearance and habits of the species in the wild is almost totally lacking.

The infrequent encounters with beaked whales at sea may result from such factors as 1) a low inconspicuous blow, 2) avoidance of ships, and/or 3) distribution in small groups in offshore areas well outside the normal boating lanes.

The following descriptions will aid primarily in identifying stranded specimens. Though subtle differences in ranges, color patterns, and dorsal fin shapes and positions may be helpful in narrowing the choices of living animals, the species will continue to be extremely difficult to distinguish from one another in the brief encounters typical at sea until additional data are collected.

The beaked whales have the following characteristics in common: 1) two small creases forming a V-shape on the throat 2) the absence of a conspicuous notch on the rear margin of the tail flukes (some specimens have a slight indentation), and 3) the absence of functional teeth in all except adult males. Adult males have a single pair of teeth in the lower jaw, the position and description of which help to identify the species. The teeth of females are not functional and only rarely emerge from the gums. Therefore, if a stranded animal is an adult male, its species can be determined by the position and description of the teeth. For example, in *Mesoplodon mirus*, the teeth are located near the tip of the lower jaw; in *M. europaeus*, they are located about a third of the way from the tip of the snout to the corner of the mouth; in *M. bidens*, they

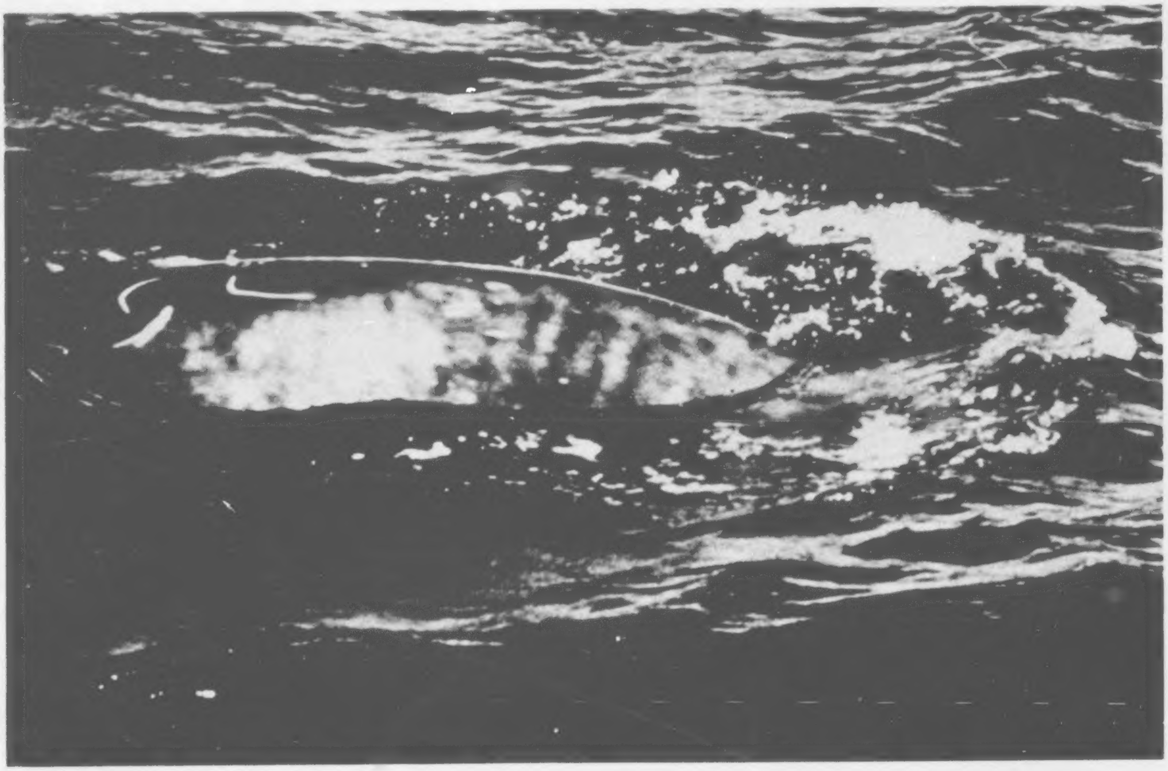


Figure 76. – An unidentified beaked whale from the mid-Pacific. Note the marks along the back, presumably tooth rakes, consisting of scratches that are paired and close together. A beaked whale in the western North Atlantic marked in this manner would be a northern bottlenosed whale (p. 67), a goosebeaked whale (p. 70), or a True's beaked whale (p. 77). These are the only three species in which the teeth are located close together near the tip of the lower jaw. (*Photo by K. C. Balcomb.*)

are nearly half way from the tip of the snout to corner of the mouth; and in *M. densirostris*, they are located in large prominences near the back of the mouth.

If the animal is a female or an immature male, however, museum preparation and examination might be required before the species can be positively determined. The following four sections summarize characters of western North Atlantic beaked whales.

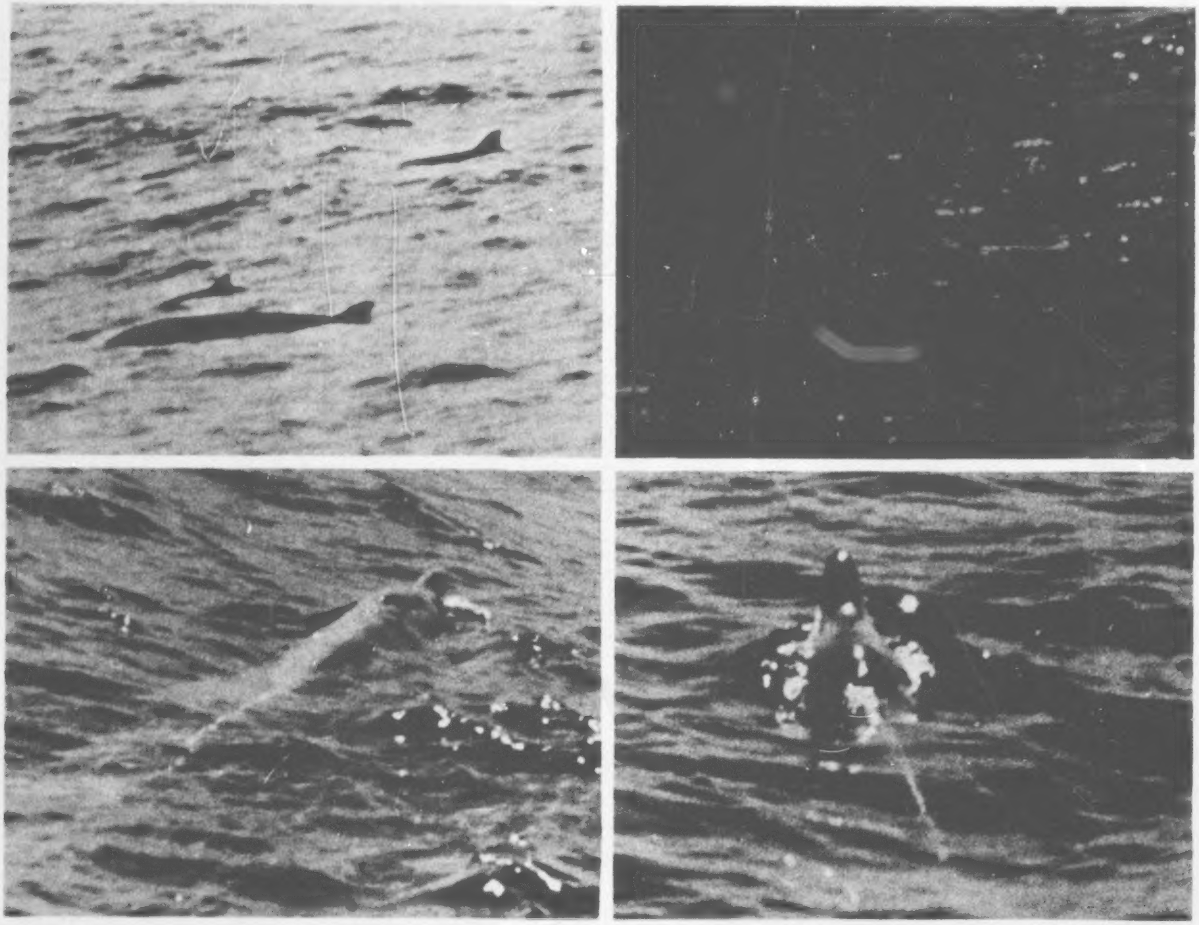


Figure 77. – Various views of a herd of five or six unidentified beaked whales, possibly dense-beaked whales, 12 miles off Pokai Bay, Oahu, Hawaii. The animals were very shy and had low indistinct blows, making them difficult to spot and track. As they surfaced, individuals frequently bucked their heads and slapped the chin against the surface, rather than rolling. They did not raise their tail flukes when beginning their long dives. (*Photos by E. Shallenberger, Sea Life Park, Hawaii.*)

[Because so little is known of beaked whales every encounter should be recorded in as much detail as possible.]

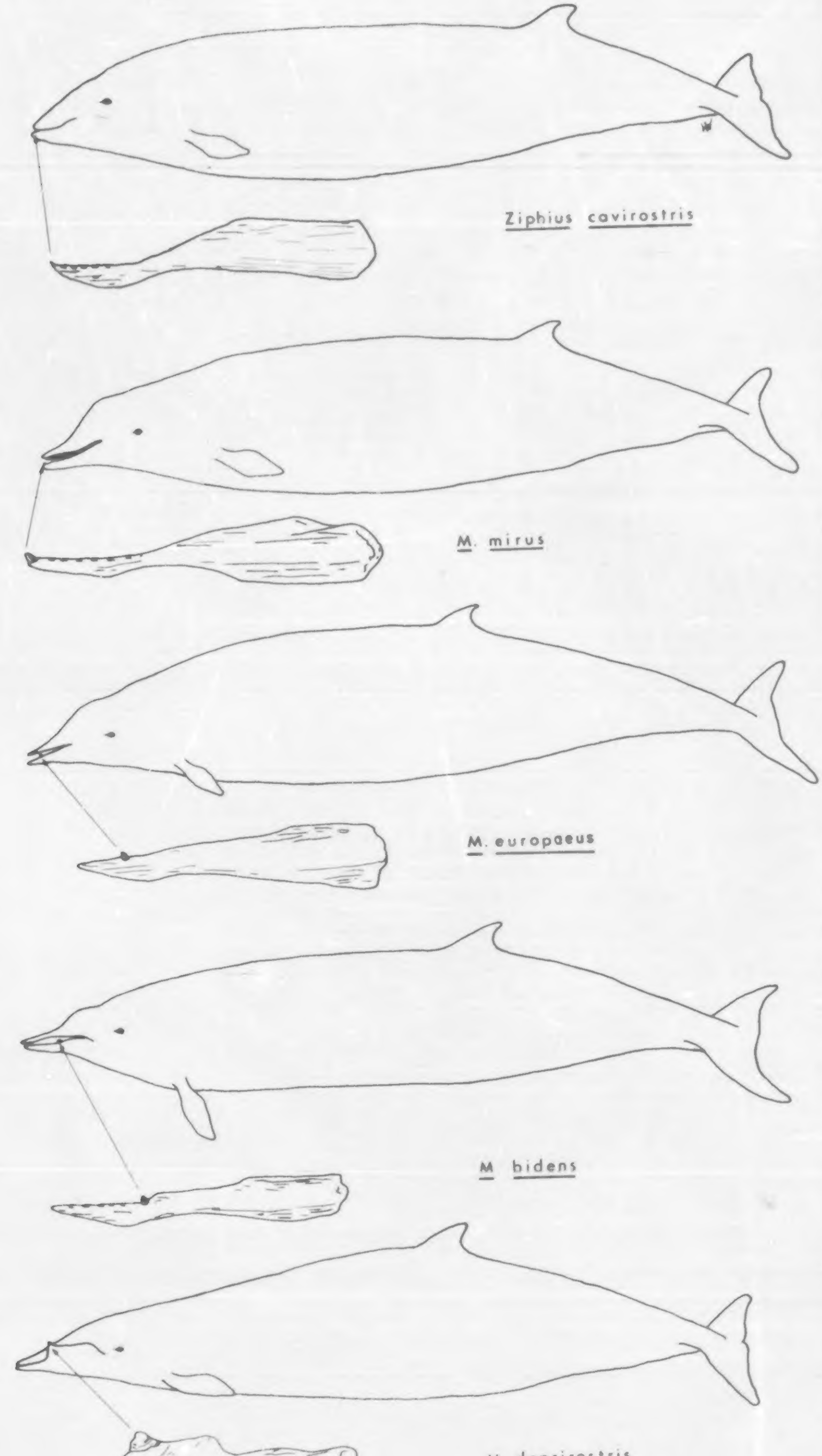

Ziphius cavirostris
M. mirus
M. europaeus
M bidens
M. densirostris

Figure 78.—Adult male beaked whales, showing the body profile and the relative positions of the teeth. Remember that the teeth of females and immature males are concealed beneath the gums. (*Drawing by L. Winn.*)

TRUE'S BEAKED WHALE (T)

Mesoplodon mirus True 1913

Other Common Names

None known.

Description

True's beaked whales reach a length of at least 16 feet (4.9 m) long. They are chunky in midbody and narrow rapidly towards the tail, closely resembling goosebeaked whales (p. 70). In overall body shape, the head is small with a slight indentation in the area of the blowhole, a slight bulge to the forehead, and a pronounced beak. The flippers are small (from one-fourteenth to one-tenth the body length). The dorsal fin is small, slightly falcate, located in the latter third of the back, and followed by a pronounced ridge on the tail stock. The flukes, which sometimes contain a very slight notch, are broad (to almost one-fifth the body length).

True's beaked whales are dull black to dark gray on the back, lighter slate gray on the sides, and white on the belly. The body is frequently covered with light colored spots or splotches and bears numerous pairs of scratch marks, presumably tooth rakes (Fig. 76).

The flippers are all black and are attached in the dark coloration of the animal's side. The flukes are dark above and below.

May Be Confused With

True's beaked whales are most likely to be confused with goosebeaked whales (p. 70) but may also be confused with any of the other beaked whales species (p. 74 and Fig. 78).

Distribution

True's beaked whales appear to be primarily temperate in distribution. They have been reported from Cape Breton Island, Nova Scotia south as far as Flagler Beach in Florida. Northernmost records are for summer months.

The range of True's beaked whales overlaps with that of the Antillean beaked whale but is more northerly.

Stranded Specimens

The teeth of adult male True's beaked whales may be visible near the tip of the lower jaw, a characteristic shared with the goosebeaked whale (p. 70) and the northern bottlenosed whale (p. 67). Both these other species reach substantially greater maximum lengths than True's beaked whales, however, and should be readily distinguishable by this and the number of other highly distinctive characteristics of each species.

Females and subadult males may be confused with any of the beaked whales species (p. 74 and Fig. 78).

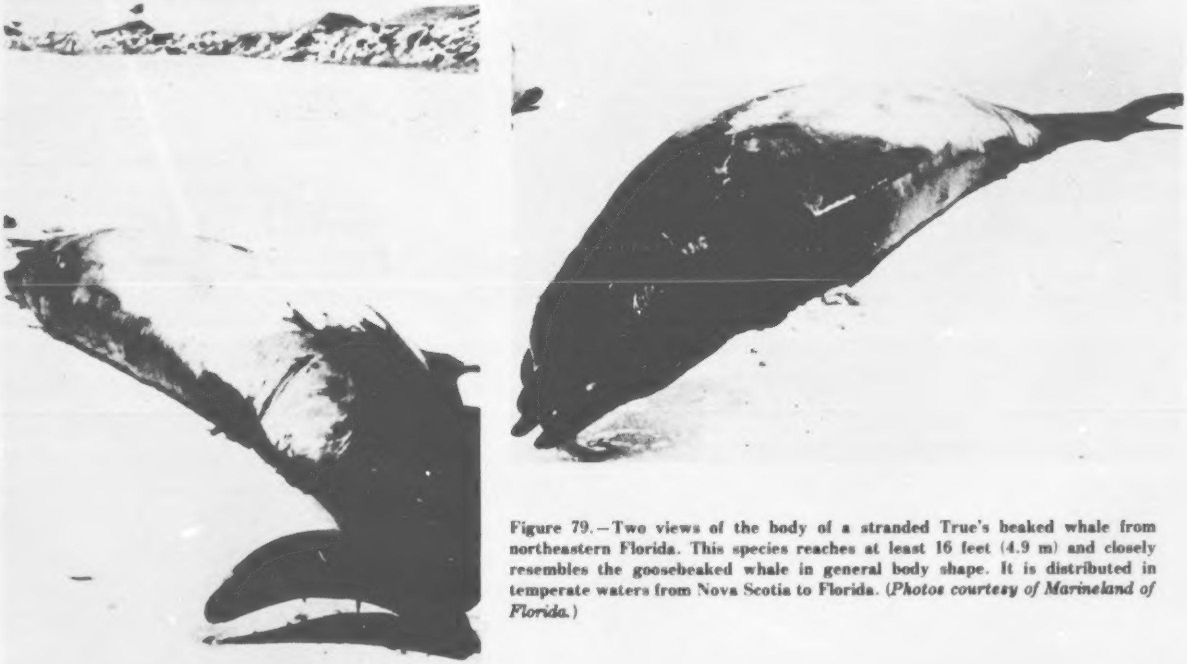
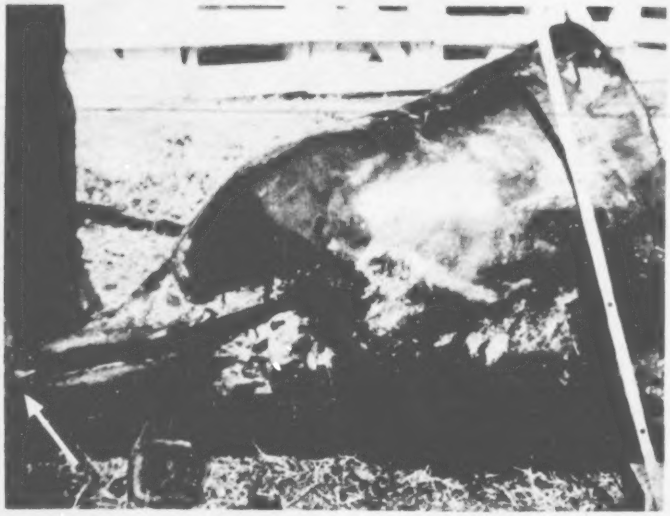


Figure 79.—Two views of the body of a stranded True's beaked whale from northeastern Florida. This species reaches at least 16 feet (4.9 m) and closely resembles the goosebeaked whale in general body shape. It is distributed in temperate waters from Nova Scotia to Florida. (*Photos courtesy of Marineland of Florida.*)



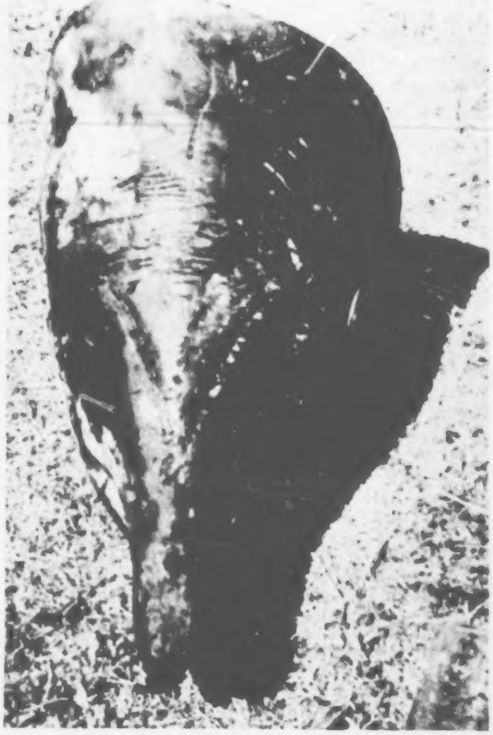


Figure 80. – **The head of a True's beaked whale stranded in North Carolina. Note the small head, the pronounced beak, and the position of the blowhole in the indentation behind the forehead. The teeth, visible above the gums only in adult males, are in the position indicated by the arrow. The photo on the right shows the two V-shaped throat grooves characteristic of beaked whales.** *(Photos from U.S. National Museum, courtesy of J. G. Mead.)*

ANTILLEAN BEAKED WHALE (T)

Mesoplodon europaeus (Gervais 1855)
(equals *M. gervaisi* [Deslongchamps])

Other Common Names

Gulfstream beaked whale, Gervais' beaked whale.

Description

Antillean beaked whales reach a length of at least 22 feet (6.7 m). They are slender in form and appear somewhat laterally compressed (i.e., taller than they are wide). The head is extremely small and tapers rapidly to a narrow beak. The flippers are small (to about one-twelfth the body length) with their origin well down on the sides of the body. The dorsal fin is small, located behind the midpoint of the back, and variable in shape from falcate to triangular. The flukes are less than one-fifth the body length and are not notched.

Antillean beaked whales are dark grayish black on the back and sides, slightly lighter on the abdomen. The flukes are dark gray above and below.

Natural History Notes

Antillean beaked whales are probably primarily oceanic in distribution and are known to feed on squid.

May Be Confused With

Antillean beaked whales may be confused with any of the other beaked whales though they are larger than all except the northern bottlenosed whale (p. 67) and the goosebeaked whale (p. 70).

Distribution

Antillean beaked whales have been reported stranded from the latitude of Long Island, N.Y. south to Florida, thence into the Caribbean and the Gulf of Mexico.

Stranded Specimens

The teeth of Antillean beaked whales are located at the suture of the mandible, about one-third of the way from the tip of the snout to the corner of the mouth (Fig. 78).

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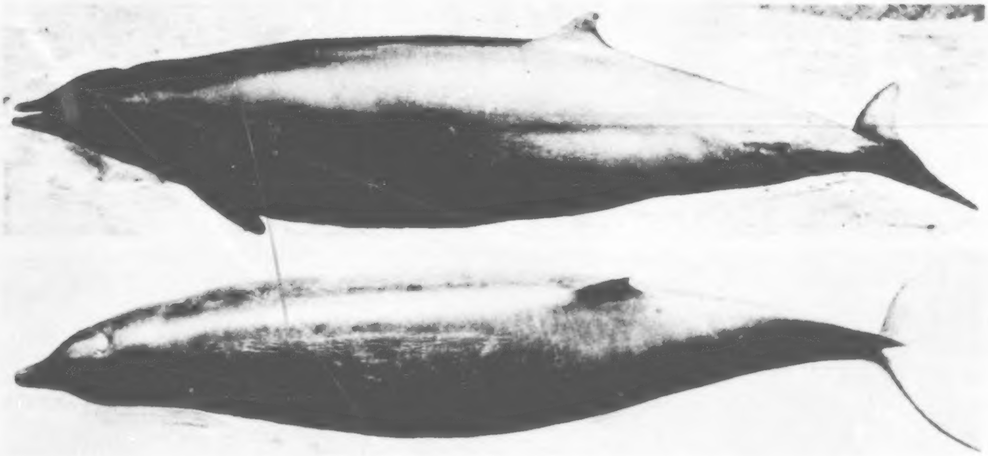
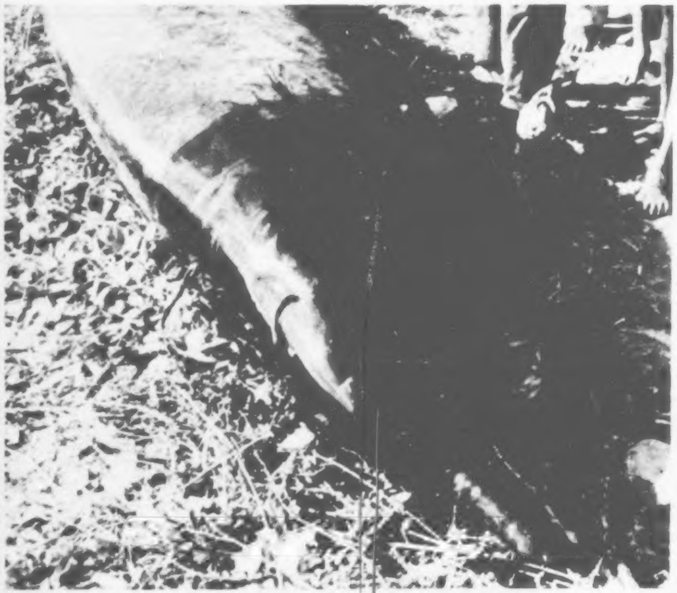


Figure 81. – Two views of an Antillean beaked whale stranded in New Jersey in 1899. Note the very small head, the prominent back-curved dorsal fin, and the slightly concave rear margin of the tail flukes, which lack a distinct notch. (*Photos by F. W. True, courtesy of U.S. National Museum.*)



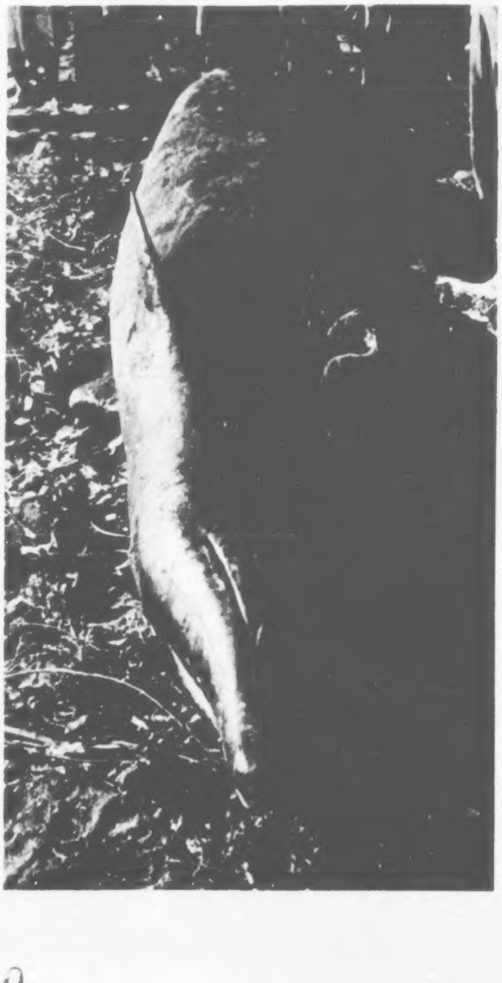


Figure 82. – Two views of an Antillean beaked whale stranded in Jamaica. This species reached at least 22 feet (6.7 m) in length. Compared to the smaller True's beaked whale, Antillean beaked whales have a smaller head, a narrower beak, and a taller, narrower body. Furthermore, the teeth of this species are located about one-third of the way back from the tip of the snout to the corner of the mouth. (*Photos by J. J. Rankin.*)

DENSE-BEAKED WHALE (T)

Mesoplodon densirostris (Blainville in Desmarest 1817)

Other Common Names

None known.

Description

Dense-beaked whales reach a length of at least 17 feet (5.2 m). The body is distinctly spindle-shaped. The head, the contour of which is the most distinctive characteristic of this species, is marked by a prominent rise, located near the angle of the gape on each side. This rise, which bears the teeth, gives a peculiar high, arching contour to the mouth (p. 84), particularly in adult males.

The flippers are small (one-eleventh to one-tenth the body length) and have their origin in the lighter color of the lower sides. The dorsal fin varies from small and triangular to nearly falcate and pointed on the tip. It is located behind the midpoint of the back. The flukes are from one-sixth to one-fifth the body length, are seldom notched, and occasionally even bulge slightly backwards near the center of the rear margin.

Dense-beaked whales are black or charcoal gray on the back, slightly lighter on the abdomen. They are somewhat blotched with grayish white and are often extensively scratched or scarred. The flippers are lighter than the back. The flukes are dark above, light below.

Natural History Notes

From stomach contents of stranded animals dense-beaked whales are known to feed on squid.

May Be Confused With

Adult male dense-beaked whales can be separated from the other beaked whales by the high, arching contour to the corners of the mouth. If there is no adult male in the group, however, dense-beaked whales may be confused with any of the other beaked whales species.

Distribution

Dense-beaked whales have been reported from Peggys Cove, Nova Scotia south to Florida. From all accounts, this species appears widely but sparsely distributed in warm temperate seas.

Stranded Specimens

Adults of this species should be distinguishable by the highly distinctive contour of the mouth. The teeth, located in the high rise of the mouth, are oriented slightly backwards.

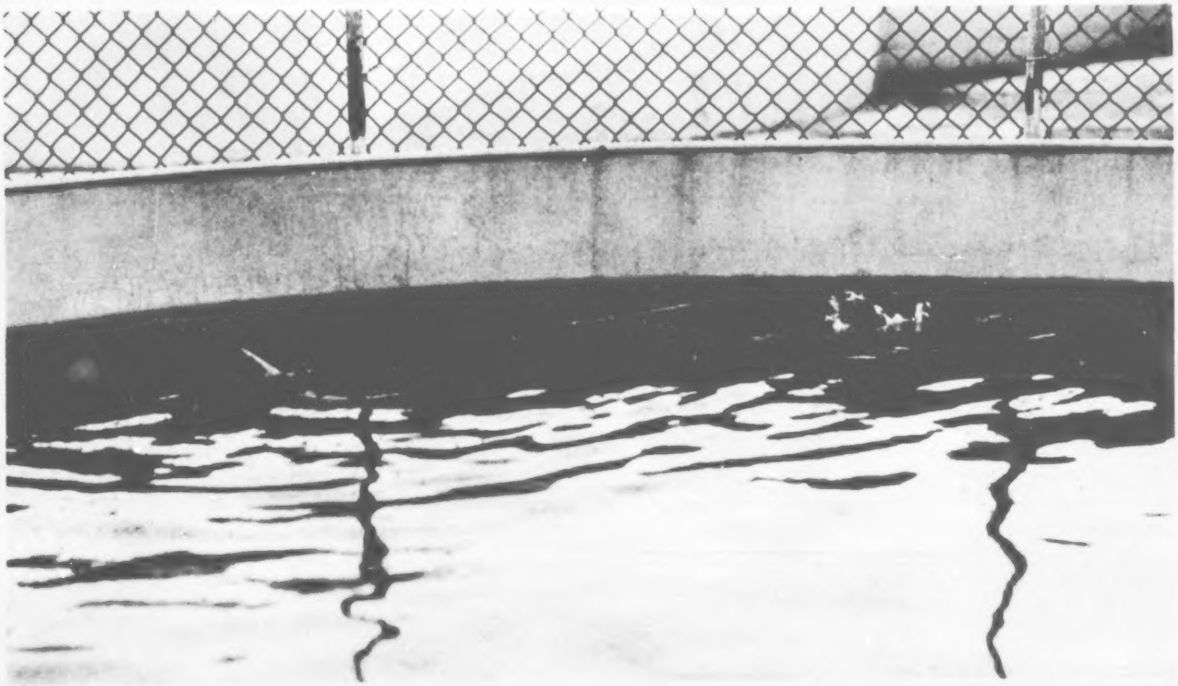


Figure 83. – A dense-beaked whale in the tank at New York Aquarium. Note the position of the prominent dorsal fin, just breaking the surface. The blow of beaked whales is usually small and inconspicuous and reportedly projects markedly forward from the head. ***(Photo by J. G. Mead.)***

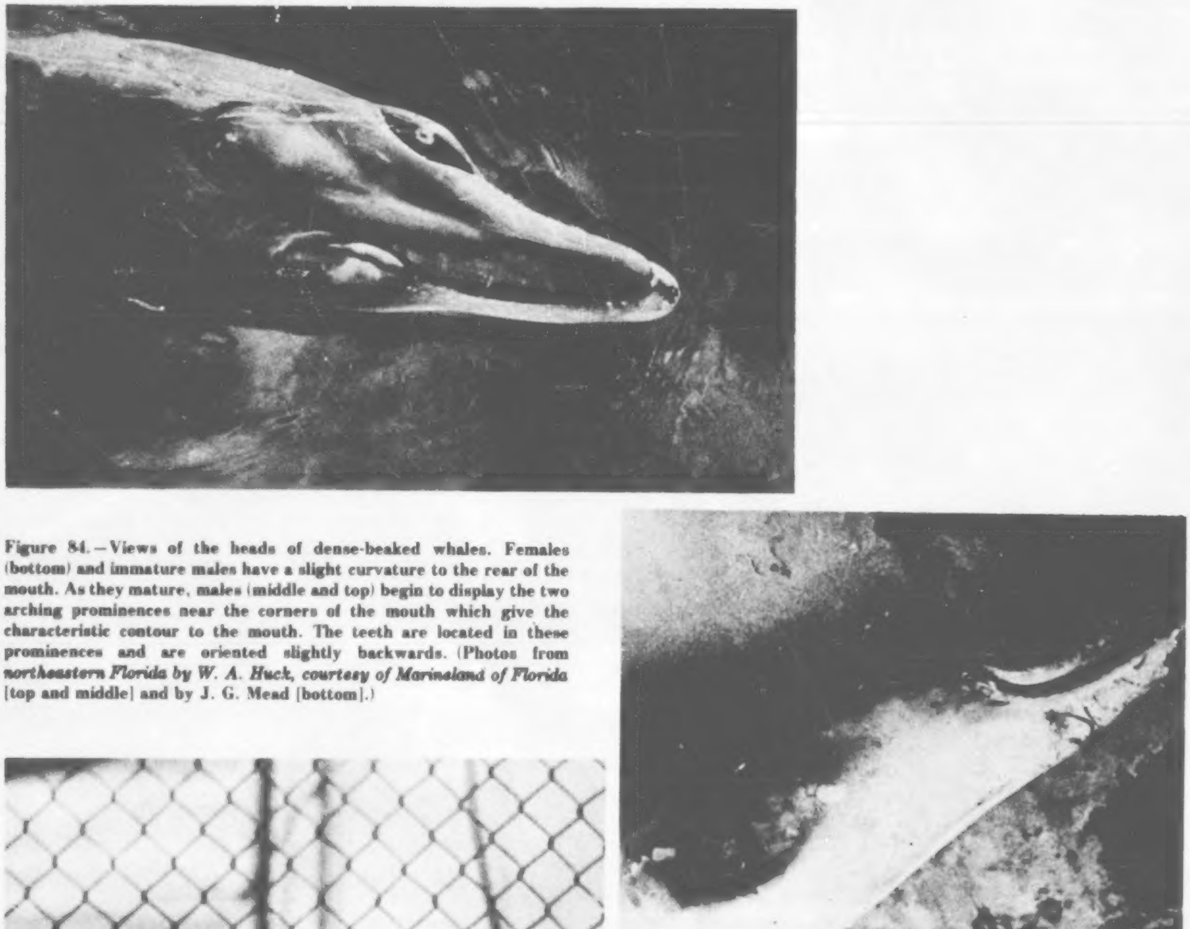


Figure 84.—Views of the heads of dense-beaked whales. Females (bottom) and immature males have a slight curvature to the rear of the mouth. As they mature, males (middle and top) begin to display the two arching prominences near the corners of the mouth which give the characteristic contour to the mouth. The teeth are located in these prominences and are oriented slightly backwards. (Photos from *northeastern Florida by W. A. Huck, courtesy of Marineland of Florida* [top and middle] and by J. G. Mead [bottom].)

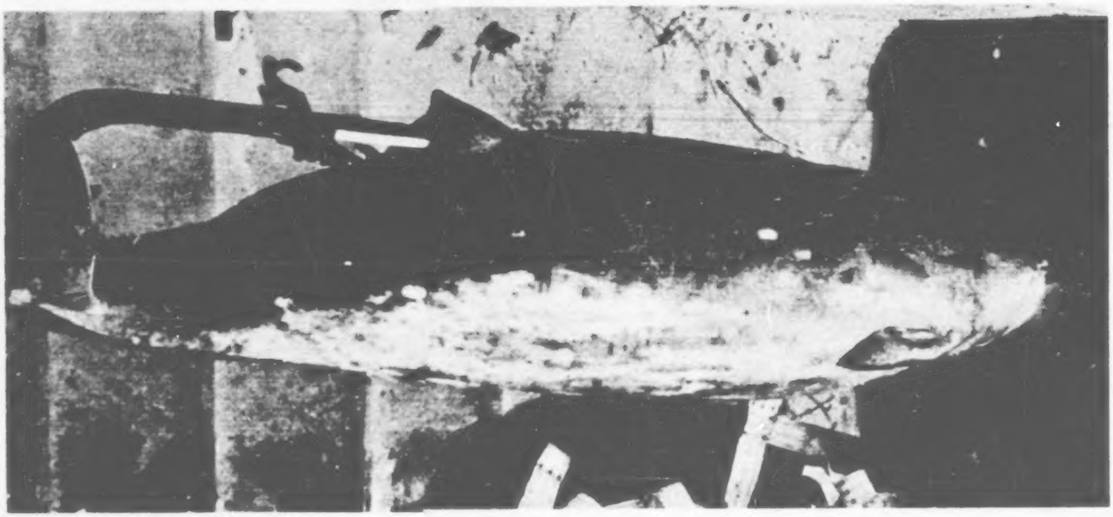


Figure 85. – A dense-beaked whale stranded in northeastern Florida. This species reaches about 17 feet (5.2 m) and is black or charcoal gray on the back, lighter gray on the sides, and frequently marked with grayish-white blotches and often extensively scarred. *(Photo by W. A. Huck, courtesy of Marineland of Florida.)*

NORTH SEA BEAKED WHALE (T)

Mesoplodon bidens (Sowerby 1804)

Other Common Names

Sowerby's beaked whale.

Description

North Sea beaked whales reach a length of at least 16.5 feet (5 m). The body is distinctly spindle-shaped, but apparently more robust near midbody than that of the dense-beaked whale. The head is characterized by a pronounced bulge in front of the blowhole, a slightly concave forehead, and a moderate to long beak. The flippers are relatively long (one-eighth to one-ninth the body length). The dorsal fin is reportedly tall and variable in shape from triangular to slightly falcate and is located just behind the midpoint of the back. The flukes are not notched but are sometimes quite concave on the rear margin.

Adult North Sea beaked whales are dark charcoal gray on the back with white spots overall. Young animals are also dark charcoal gray on the back but are lighter on the belly and are unspotted. The flukes of adults are dark above and below. Those of young are dark above, lighter below.

Natural History Notes

North Sea beaked whales are known to feed on squid.

May Be Confused With

North Sea beaked whales are the most northerly species of beaked whales. No other species is very likely to be encountered in the same area.

Distribution

North Sea beaked whales have been reported in the offshore waters from the latitude of New England north perhaps to the pack ice. Individuals are occasionally drawn to the coasts of Newfoundland in summer, presumably by concentrations of squid, a known food item.

Stranded Specimens

The teeth of North Sea beaked whales are located about midway between the tip of the snout and the corner of the mouth. Except for this characteristic and their northerly distribution, however, this species might easily be confused with any other of the beaked whales species.

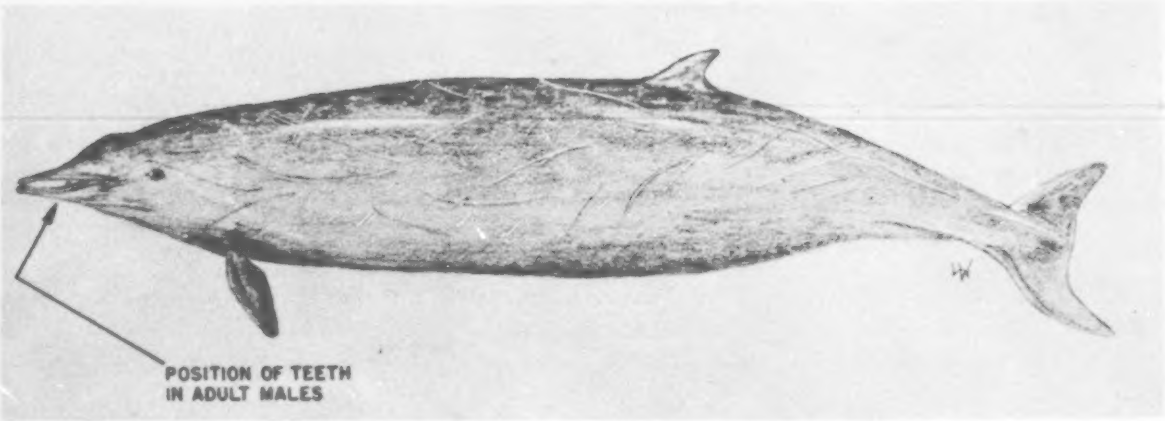


Figure 86. – North Sea beaked whales are the most northerly of the beaked whale species, extending north as far as the pack ice. They reach at least 16.5 feet (5.0 m) and can be identified on the beach by the position of the teeth near the middle of the lower jaw. Little is known of the species at sea. (*Drawing by L. Winn.*)

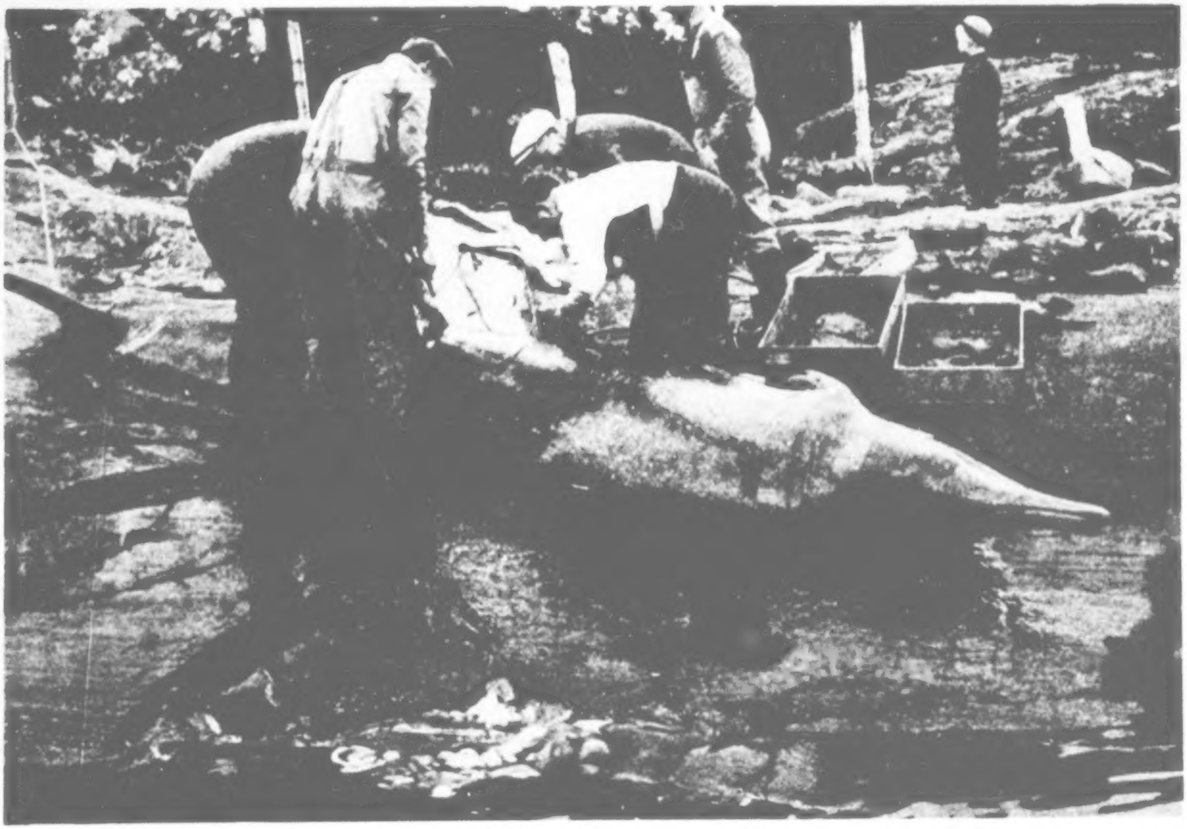


Figure 87. – A female North Sea beaked whale (16.5 feet [5.0 m]) stranded in Hjertuika in 1957. (*Photo courtesy of A. Jonsgard.*)

KILLER WHALE (T)

Orcinus orca (Linnaeus 1758)

Other Common Names

Blackfish (see also pilot whales, p. 91 and 94), sword fish (Canada), grampus (see p. 96), whitefish (St. Vincent), Espladon (Quebec).

Description

Killer whales are the largest member of the dolphin family. Adult males reach a length of at least 30 feet (9.1 m) and are robust in form. One specimen of 31 feet (9.5 m) was recorded for the western North Pacific. Females are considerably smaller and less stocky. Newborn are approximately 7-8 feet (2.1-2.4 m) long. Killer whales have large paddle shaped flippers.

The most distinctive field character of the species is the dorsal fin. In adult males it is extremely erect and may be as much as 6 feet (1.8 m) tall. Though the fin of females and immature males is less than 3 feet (0.9 m) tall, it is nonetheless taller even in these animals than in any other cetacean species and is distinctly falcate and pointed on the tip.

Killer whales are basically black with an extensive region of white on the undersides extending from the lower jaw to the anal region with a branch extending onto the flanks behind the dorsal fin. There is an oval white patch on the side of the head just above and behind the eye. In newborn and very young calves, these regions may be tan to lemon yellow in color. Most animals have a light gray saddle marking just behind the dorsal fin. The undersides of the flukes are usually white. Both all-black and all-white animals have been reported.

Natural History Notes

Killer whales travel in groups of from a few to 25 or 30 individuals, though herds of 150 have been reported. Males appear polygamous, and females and young may form groups separate from young bachelors and bulls.

Killer whales are extremely fast swimmers, capable of reaching top speeds of 25 knots or more, and have been reported "porpoising" and breaching. Individuals and entire groups have also been reported "spy-hopping," or "pitchpoling," behaviors which consist of hanging vertically in the water with the head and much of the body (to just behind the flippers) exposed above the surface.

Killer whales feed on squid, fishes, sea turtles, seabirds, and marine mammals.

Controversy still continues over whether or not killer whales pose a threat to man. Documented attacks of killer whales on boats are rare and have usually been provoked (i.e., harpooning or attempts to capture). Only two uncertain instances of attacks in the wild have been reported, but all divers and mariners should be cautioned that this powerful animal is perfectly capable of doing tremendous damage and should not be provoked.

May Be Confused With

Because of its very distinctive dorsal fin, body shape, and coloration, the killer whale is not likely to be confused with any other whale when it can be examined at close range or when an adult male is present in the group. Pods of females and immature animals, however, may be confused with false killer whales or with grampus. The killer whales may be distinguished from false killers by the following differences:

Killer Whale	**False Killer Whale**
BODY SHAPE	
Chunky.	Slender.
BODY COLOR	
Black with white on belly, flank, and head.	All black with some gray on belly.
DORSAL FIN	
Very tall and erect in adult males; tall and slightly back curved in female.	Shorter, slender, strongly falcate.
HEAD SHAPE	
Broad, rounded.	Tapered, slender.
FLIPPER SHAPE	
Paddle-shaped.	Moderately long with characteristic hump near middle on forward margin.
LENGTH	
To at least 30 feet (9.1 m).	To at least 18 feet (5.5 m).

Furthermore, false killer whales are the only "blackfish" which are known to ride the bow wave of a ship.

Grampus have a tall dorsal fin (15 inches [38.1 cm]) which is very similar in appearance to that of adult female and juvenile killer whales. But grampus have much lighter coloration, from slate gray to nearly all white, and larger animals are covered with numerous scratches. Upon closer examination they can be further distinguished from killer whales by a crease in the front of the head dividing the melon into two distinct sections. Grampus are considerably smaller, to about 13 feet (4 m) maximum length.

Distribution

In the western North Atlantic killer whales have been reported from the polar pack ice south to Florida and St. Vincent, Lesser Antilles, and into the Gulf of Mexico at least as far as Texas, though they are far more common in the

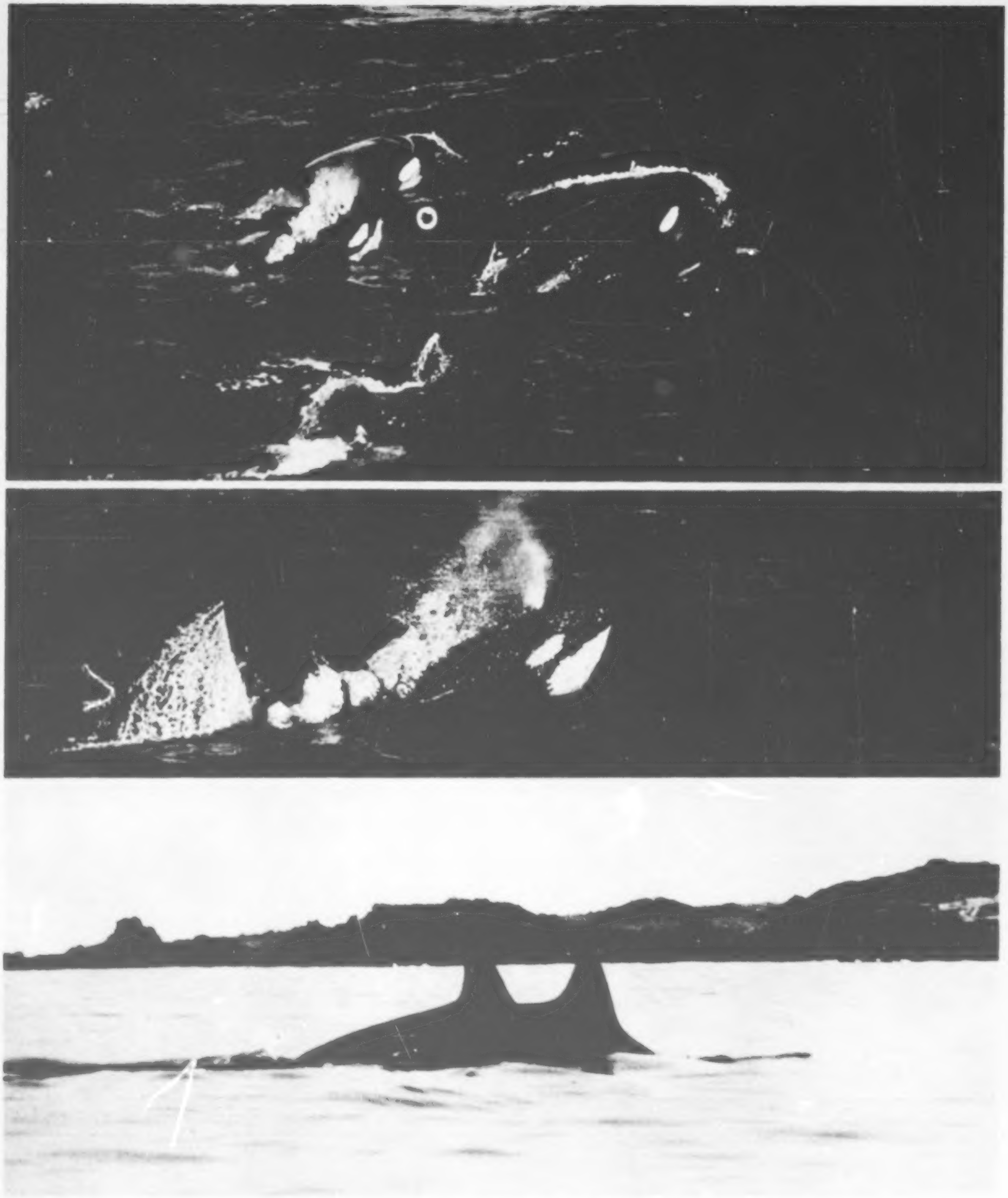


Figure 88. – A small herd of killer whales off southern California (top) and details of an adult male from that herd (middle) and of females or immature males off Islas San Benito, Baja California (bottom). Adult males have a tall erect dorsal fin, which may be more than 6 feet (1.8 m) tall, while the fins of females and immature males are less than 3 feet (0.9 m) tall, distinctly falcate, and pointed on the tip. Both sexes frequently have a grayish-white region, called a "saddle," behind the dorsal fin. (*Photos by T. Dohl [top and middle] and S. Leatherwood [bottom].*)

cooler waters from about New Jersey north. Throughout their range, killer whales seem to prefer coastal areas and often enter shallow bays, estuaries, and river mouths in search of food.

Migrations of the species are probably closely tied to movements of their food supply. They annually arrive on the coast of New England with the tuna. Along the Canadian coasts, where distribution and migrations have been described in some detail, killer whales appear to move inshore in spring and summer. Many arrive off the east coast of Newfoundland in June, the Strait of Belle Isle in June and July, and slightly later along the Labrador coast and Arctic waters. They are found around the loose ice in April, presumably feeding on harp seals, *Pagophilus groenlandicus*, and hooded seals, *Cystophora cristata*, and are frequent in the St. Lawrence estuary in spring and autumn following the movements of the white whales. The northward movements in spring also coincide with migrations of balaenopterine whales, which have also been reported among the food items. Killer whales may remain in arctic or subarctic waters until driven out by new forming ice in October and November. Though the migration has not been as thoroughly described, killer whales apparently begin shifting southwards in autumn.

Stranded Specimens

Stranded killer whales should be readily identifiable by the robust body, the distinctive body markings, and in larger animals the tall dorsal fin. Killer whales have from 10 to 12 large, prominent teeth on each side of the upper and lower jaws.

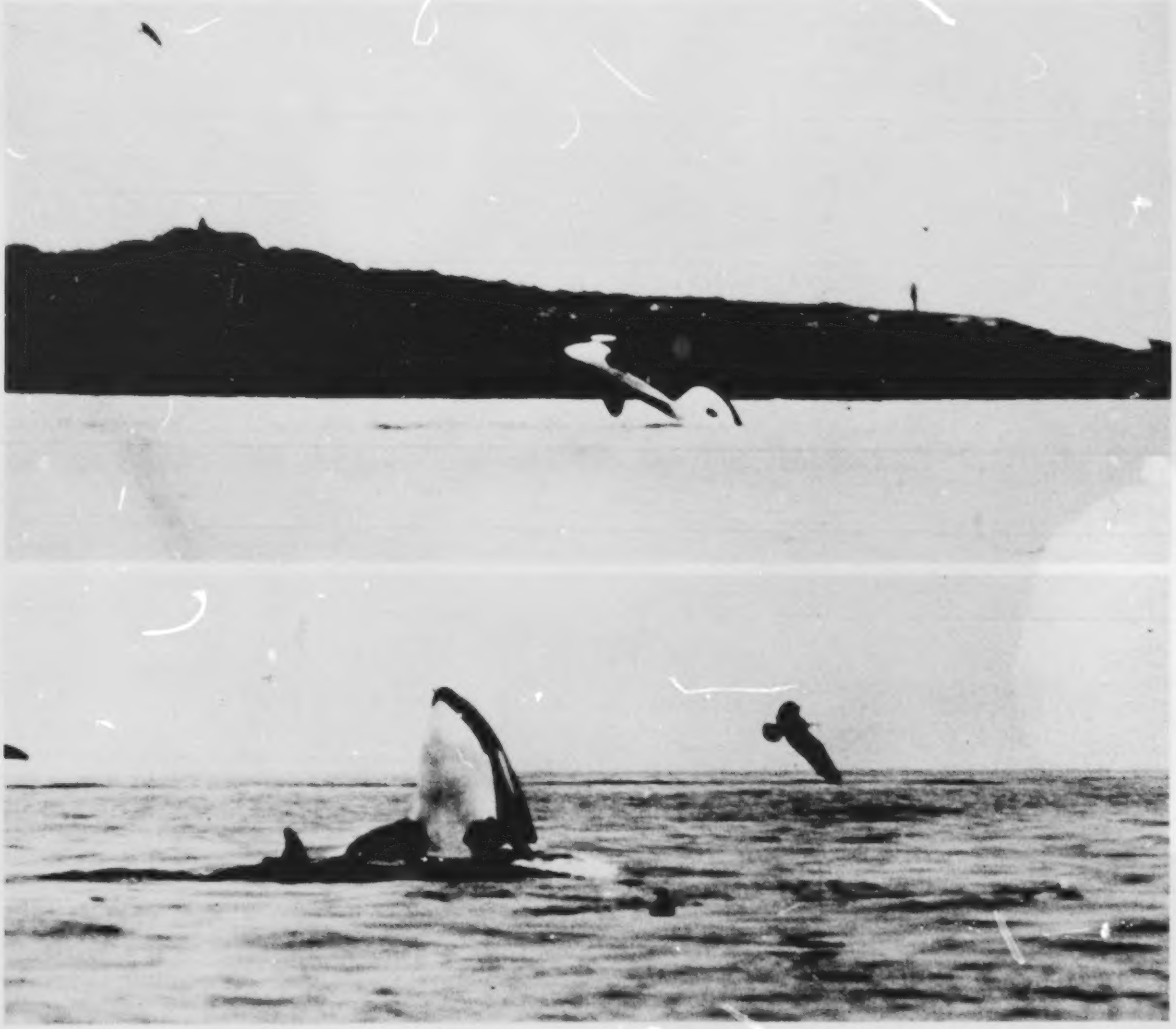


Figure 89.—Killer whales are often distributed very close to shore. In these photos from Baja California, they are shown in two characteristic behaviors—breaching (top) and "spy-hopping" or "pitchpoling" (bottom). (*Photos by S. Leatherwood.*)

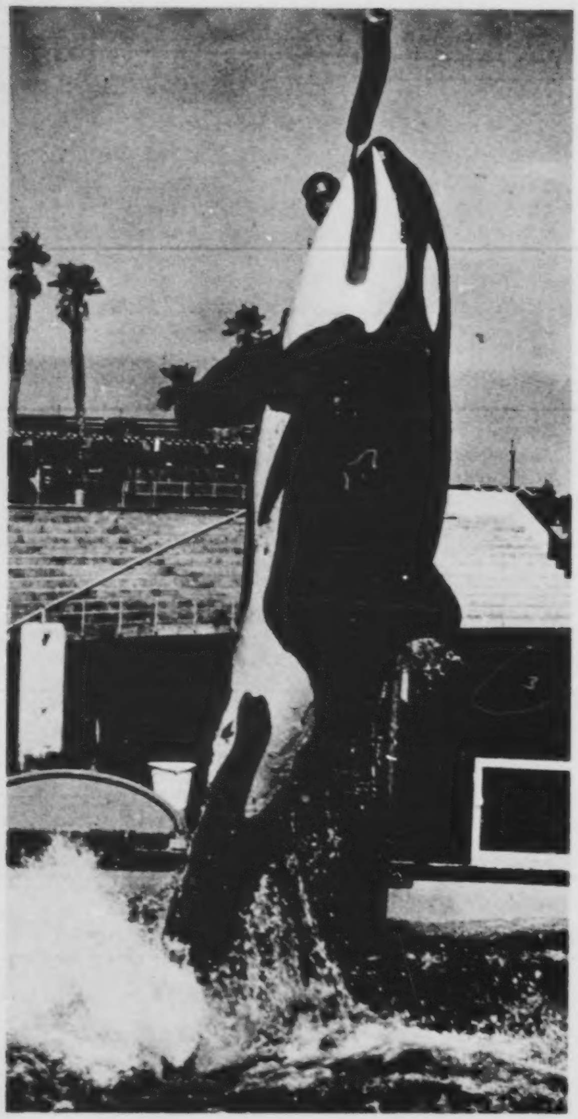


Figure 90.—A leaping killer whale in California aquarium. Note the distinctive coloration of the species, white on the lower jaw, the belly and the anus, and on both sides above the anus. Note also the distinctive white eye patch often visible on animals at sea. (*Photo by D. K. Caldwell.*)

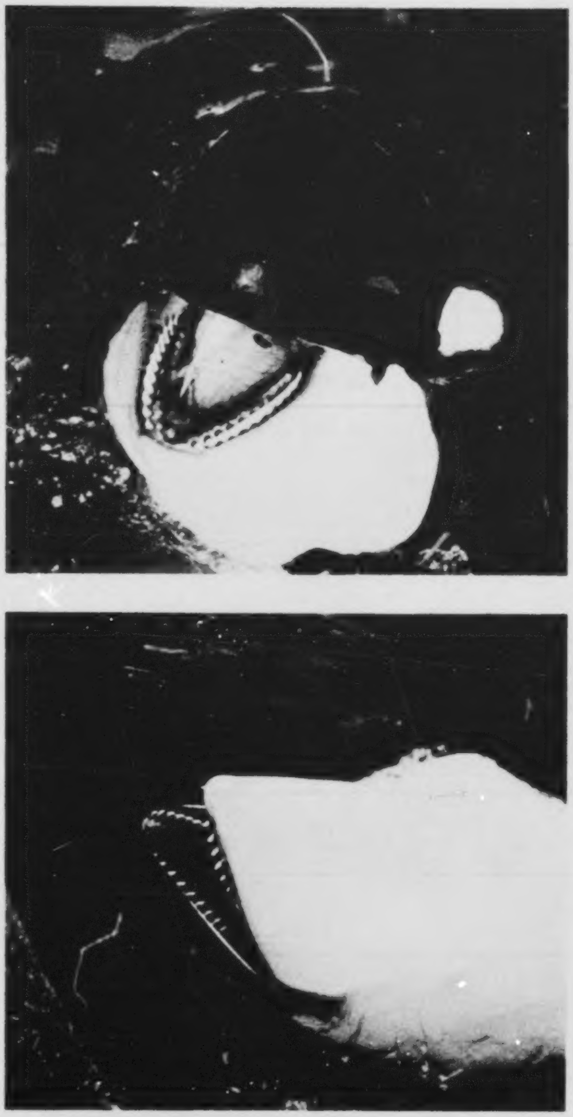


Figure 91.—Killer whales have from 10 to 12 large prominent teeth, curved slightly backwards and inwards on each side of each jaw. (*Photos from Point Mugu, Calif. by S. Leatherwood.*)

FALSE KILLER WHALE (T)

Pseudorca crassidens (Owen 1846)

Other Common Names

Mongoose (St. Vincent).

Description

False killer whales in the western North Atlantic reach a length of at least 18 feet (5.5 cm). Males are slightly larger than females. Calves from 5 to 7 feet (1.5 to 2.1 m) may be seen at any time throughout the year.

The dorsal fin, located just behind the midpoint of the back, is from 7 to 16 inches (17.8 to 40.6 cm) tall, falcate, and variable to sharply pointed on the tip. The flippers are characterized by a broad hump on the front margin near the middle, a characteristic which is diagnostic for the species.

The body of the species is all black except for a blaze of gray on the belly between the flippers. This blaze varies from barely visible to light grayish white similar to but generally fainter than that of pilot whales. The body is long and slender, and the head is narrow and gently tapered from the area of the blowhole forward.

Natural History Notes

False killer whales are a social form and may occur in herds of up to at least 100 individuals. They often jump clear of the water and frequently ride the bow waves of vessels. They are the only "biackfish" which are known to do so. False killer whales feed primarily on squid and large fishes and are notorious for their habit of stealing fish from the lines of fishermen. The large prominent teeth may be visible on a swimming animal.

May Be Confused With

False killer whales may be confused with killer whales, pilot whales, or the smaller, poorly known pygmy killer whale (p. 138) and many-toothed blackfish (p. 142).

The characteristics distinguishing the species from the killer whale are tabularized on p. 84; its differences from the pilot whales are summarized on p. 92.

At sea, false killer whales are distinguishable from the other two species primarily by their larger size and differences in coloration. False killer whales are up to 18 feet (5.5 m) in length. Pygmy killer whales and many-toothed blackfish reach only 8-9 feet (2.4-2.7 m) in length. Pygmy killer whales have an extensive region of white on the belly which my extend onto the sides and both pygmy killer whales and many-toothed blackfish have a distinctive white region on the lips, usually lacking or indistinct on false killer whales.

Neither of the smaller species of blackfish has been reported to ride bow waves.

Distribution

False killer whales are widely distributed in the pelagic tropical, subtropical, and warm temperate waters of the western North Atlantic. They have been reported from off Maryland south along the mainland coasts of North America, in the Gulf of Mexico from Cuba and the Lesser Antilles, and from the southeast Caribbean Sea. The species has been reported from Venezuela.

False killer whales do not appear to occur frequently in coastal waters, sandy bays, or estuaries, though entire herds

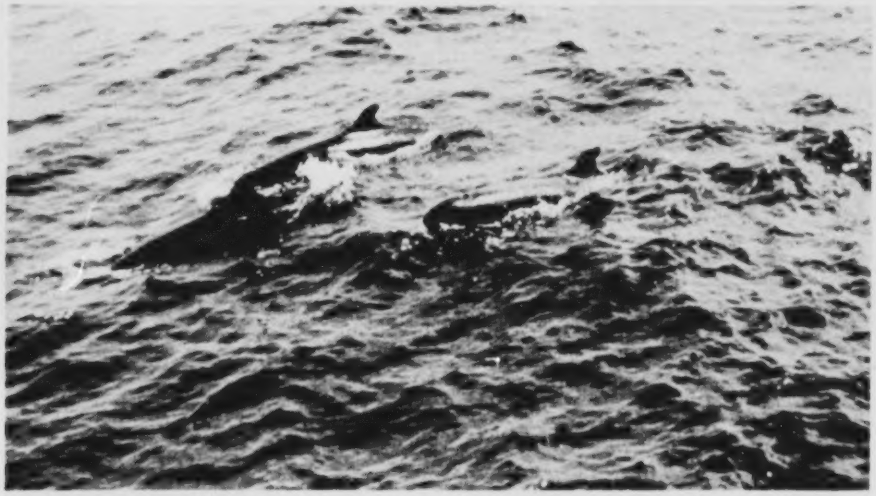


Figure 92.—False killer whales at sea 600 miles (968.0 km) off northeastern Florida. Note the smoothly falcate dorsal fin, pointed on the tip, and located near the midpoint of the back. Dorsal fins of this species may also be rounded on the tip but all are sharply concaved on the rear margin. (*Photo by H. E. Winn.*)

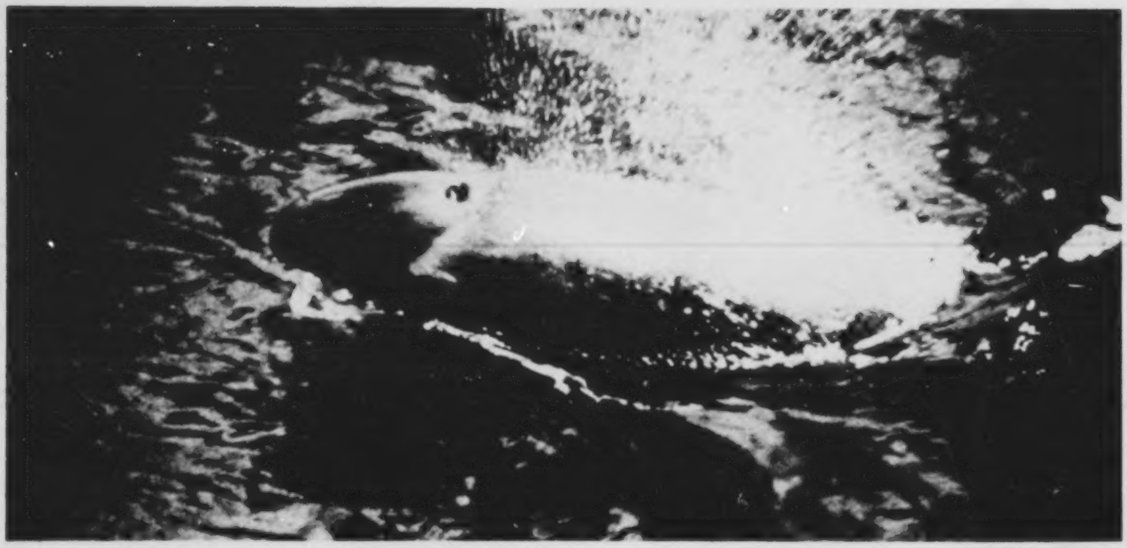


Figure 93. – False killer whales are the only "blackfish" that routinely ride the bow waves of vessels. On this animal riding on the bow wave of a research ship, note the all-black coloration of the back, head, and sides and the broad "hump" near the middle of the flippers on the leading edge. (*Photo 600 miles [968 km] off northeastern Florida by H. E. Winn.*)

have stranded in such areas. Records from throughout the range suggest that the species has an oceanic distribution.

Stranded Specimens

Stranded false killer whales can be positively identified by: 1) the large size (to 18 feet [5.5 m]); 2) the slender body tapering rapidly to a long slender head; 3) the markedly long mouth, with from 8 to 11 large, conspicuous teeth in each side of each jaw recalling those of the killer whale, but circular and not, as in killer whales, elliptical; 4) the unusually shaped flipper bulging conspicuously on the forward margin.

For comparison with "blackfish" of similar size (the pilot whales) see p. 92 and 94.

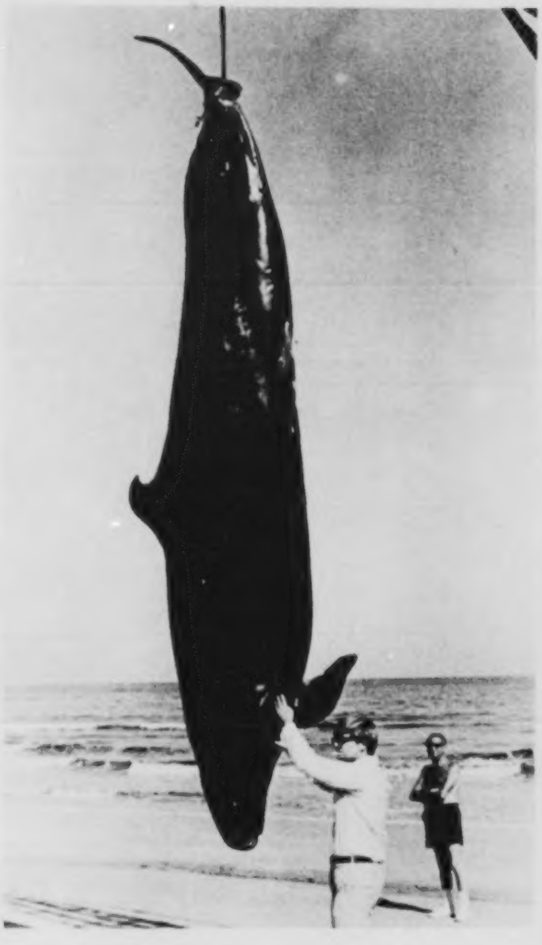


Figure 94. – A false killer whale stranded in northeastern Florida. Note the narrow tapering head, overhanging the lower jaw by several inches, the position and shape of the dorsal fin and the distinctive "hump" on the leading margin of the flippers. (*Photo by W. A. Huck, courtesy of Marineland of Florida.*)

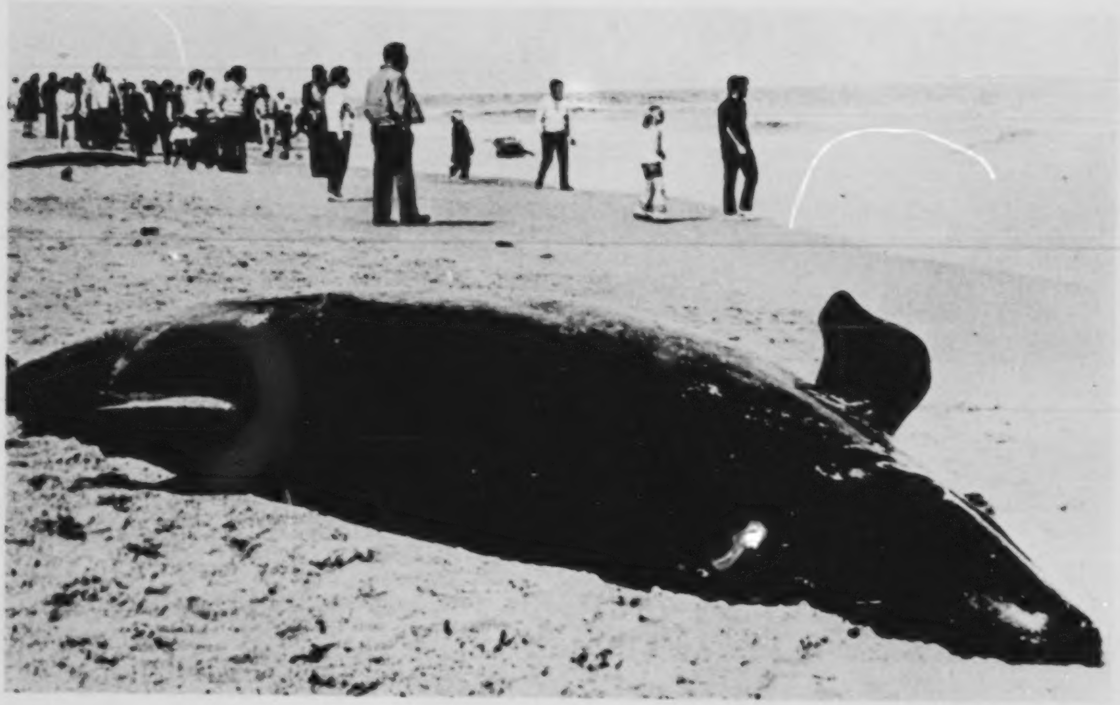


Figure 95. – Entire herds of false killer whales sometimes strand themselves. In this dorsal view of an animal stranded in southeastern Florida, note the extremely distinctive "hump" on the forward margin of the flippers and the narrow head, tapering towards the tip of the snout. (*Photo by J. Krol.*)

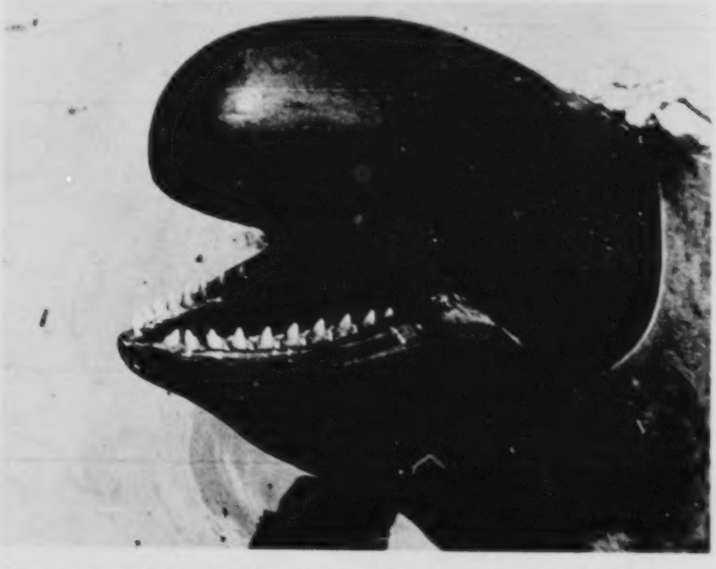


Figure 96. – False killer whales have from 8 to 11 large, conspicuous teeth in each side of each jaw. These teeth are often visible in swimming animals, particularly when they are engaged in their obnoxious habit of stealing fish from the lines of fishermen. The teeth are so distinctive that they can also be used to identify even a badly decomposed stranded specimen. (*Photo, courtesy of Sea Life Park, Hawaii.*)

ATLANTIC PILOT WHALE (T)

Globicephala melaena (Traill 1809)

Other Common Names

Northern pilot whale, long-finned pilot whale, pothead, blackfish, calling whale, caa'ing whale.

Description

Male Atlantic pilot whales reach an average length of at least 20 feet (6.2 m). Females are slightly smaller, probably not exceeding 18 feet (5.5 m). Young are 5-7 feet (1.5-2.1 m) at birth.

The head is thick and bulbous, a characteristic which reaches an extreme in the development of the head of adult males (prompting the common name "pothead"). The flippers are long (to one-fifth of the body length, or more) and sickle-shaped. The tail is dorsally thickened just in front of the flukes.

The dorsal fin of this species is one of its most distinctive characteristics. It is low in profile, has a long base, is set far forward on the animal's back, and is falcate to "flaglike" in appearance. The dorsal fin of adult males reportedly has a thicker leading edge and a rounder form than that of the female.

Atlantic pilot whales are black on the back and sides (prompting the common name "blackfish") but have an anchor-shaped patch of grayish white on the chin and a gray area on the belly, both of which are variable in extent and intensity. Some larger animals have a gray saddle behind the dorsal fin, though this zone of color is found more frequently in short-finned pilot whales. Young animals are often a lighter medium gray.

Natural History Notes

Atlantic pilot whales may occur in herds of 200 animals or more, though herds of 50 or fewer (4-6) are more common. They are sometimes found in association with Atlantic white-sided dolphins.

Pilot whales are sometimes found hanging vertically in the water with the head and part of the back out of the water in what has been called "spy-hopping" or "pitchpoling." Individuals frequently lobtail. Pilot whales infrequently breach, a behavior which is usually confined to younger animals. They do not ride bow waves.

Atlantic pilot whales feed primarily on squid but also take cod and other fishes. A Pacific pilot whale, a closely related species, was found by radio telemetric studies to be capable of diving to 2,000 feet (609.6 m).

Atlantic pilot whales were formerly the object of an active shore fishery off Newfoundland (1950-1971). In addition, entire herds and, less frequently, individuals are sometimes stranded.

May Be Confused With

Atlantic pilot whales are most likely to be confused with false killer whales, with which they share the waters from off

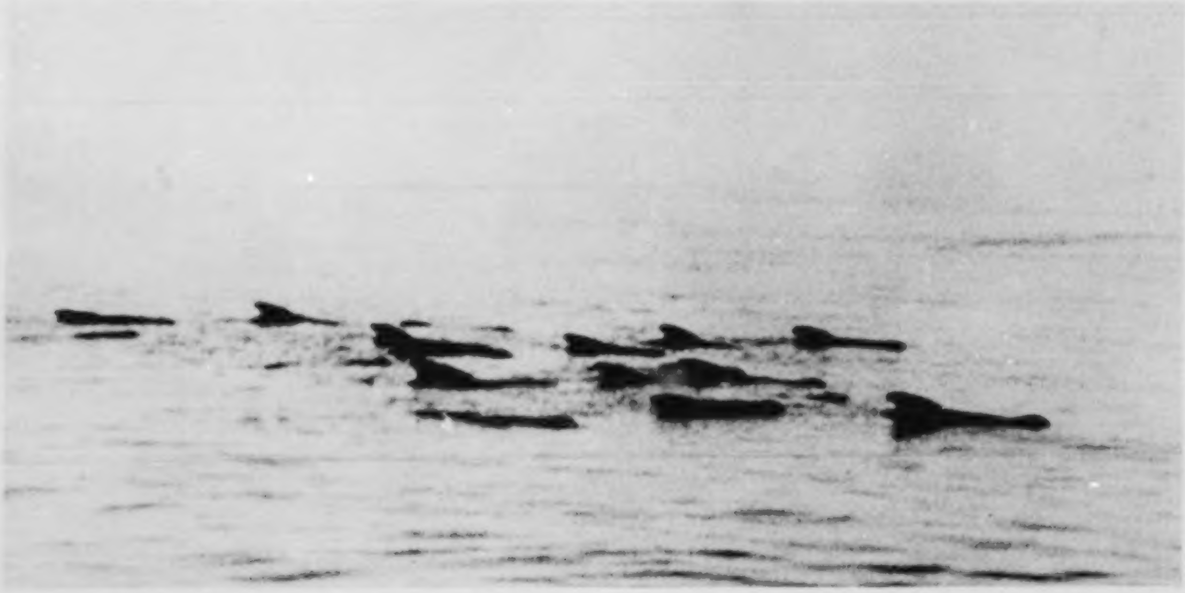
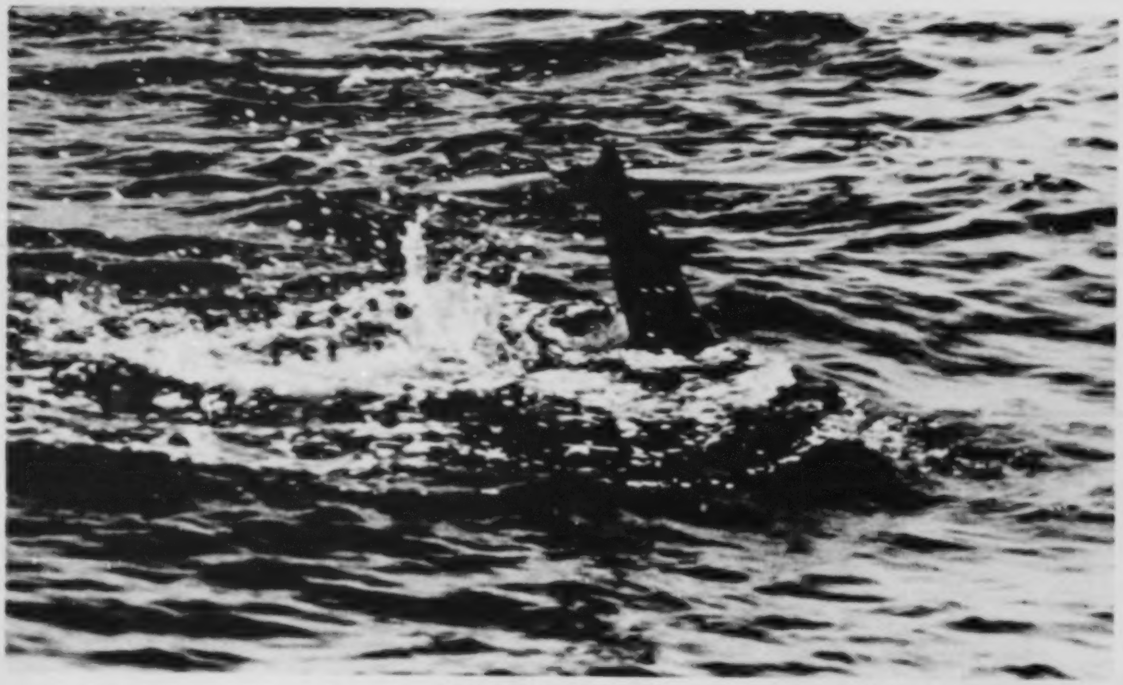


Figure 97.—A herd of Atlantic pilot whales off Massachusetts. The most distinguishing field characteristic of this species, and of their southern cousins, the short-finned pilot whales, is the highly distinctive dorsal fin, extremely long based, low in profile, and set well forward on the animals' backs. (*Photo by W. A. Watkins.*)



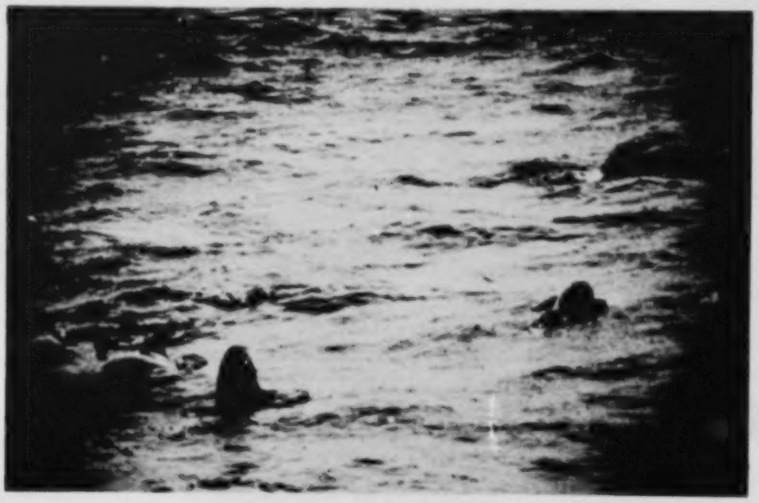


Figure 98.—Atlantic pilot whales frequently "lob tail" (raise the tail flukes above the surface and slap them against the water) (top) and pitchpole or spy-hop (hang vertically in the water with the head up and the tail down) (bottom). (*Photos from the North Atlantic by H. E. Winn.*)

Virginia to those off Maryland. The two species may be distinguished by the following characteristics:

Atlantic Pilot Whale	**False Killer Whale**
SHAPE OF HEAD	
Thick and often squarish in larger animals.	Slender, gently tapering mouth long.
SHAPE OF BODY	
Robust.	Long and slender.
DORSAL FIN	
Broad-based and falcate.	Slender, tall, falcate, and pointed on tip.
COLORATION	
Black with gray saddle sometimes evident behind dorsal fin and gray region on chin and belly.	Mostly black with gray blaze of variable extent and intensity on belly between flippers.

BEHAVIOR	
Will not ride bow waves; seldom breaches.	May ride bow waves, often "porpoises" and breaches.
RANGE	
Temperate waters from at least North Carolina north.	Temperate seas from at least Maryland south.

In the extreme southern portion of their range, Atlantic pilot whales may be confused with short-finned pilot whales with which they have only a limited seasonal common range. Characters distinguishing these species are subtle and may not be adequate to permit them to be distinguished at sea. For purposes of this guide it is generally that pilot whales living north of lat. 38°N (Virginia coast) are Atlantic pilot whales and those living south of lat. 38°N are short-finned pilot whales.

Distribution

Atlantic pilot whales, the northernmost of the two pilot whales species, are found in winter from the Grand Banks south as far as North Carolina and in summer from Iceland and Greenland south to the New Jersey coast. Winter concentrations of pilot whales may be found off the Newfoundland coast and near Cape Cod, Mass. Atlantic pilot whales are distributed both in coastal waters and in deep waters off the continental shelf.

Stranded Specimens

As discussed above, individuals and groups of pilot whales frequently strand themselves for still incompletely understood reasons. They may be identified as pilot whales primarily by: 1) the robust body and bulbous head, which is often squarish in adult animals, and 2) the broad-based, falcate dorsal fin located far forward on the back. Accurate determination of the pilot whale species involved in the stranding may require museum preparation of the skull and detailed examination of its characteristics. Preliminary identification may be made, however, based on the following:

Atlantic Pilot Whale	**Short-Finned Pilot Whale**
FLIPPER LENGTH	
To one-fifth body length, or more.	To one-sixth body length, or less.
NORMAL RANGE	
From North Carolina north.	From North Carolina south.
TEETH	
8-11 per row.	7-9 per row.

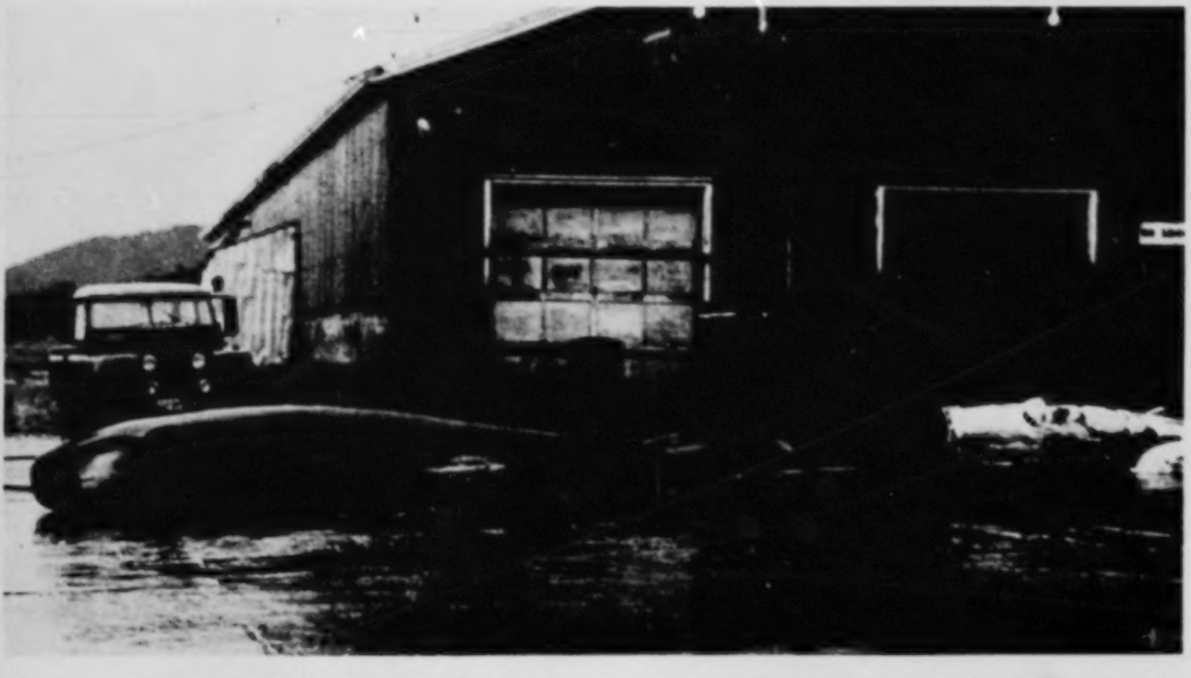


Figure 99. – North Atlantic pilot whales on the deck of a whaling station in Newfoundland. The anchor-shaped patch on the chin and the gray color of the belly are apparently more vivid and extensive in this species than in the short-finned pilot whales. Further, the flipper is longer, measuring one-fifth of the body length, or more, in adult animals. The flippers of short-finned pilot whales (see Fig. 102) measure one-sixth of the body length or less. (*Photo by J. G. Mead.*)

SHORT-FINNED PILOT WHALE (T)

Globicephala macrorhynchus Gray 1846

Other Common Names

Blackfish (see also p. 84, 91, and 94).

Description

Male short-finned pilot whales of the western North Atlantic reach lengths of at least 17.5 feet (5.3 m). Females are reportedly slightly smaller than males (recorded only to 15.5 feet [4.7 m]).

The head, somewhat like that of the Atlantic pilot whales (p. 91), is thick and bulbous, a characteristic which reaches its extreme in the development of a flattened or squarish appearance to the front of the head in mature males (see Fig. 101). In very old males the melon may overhang the mouth up to several inches. The flippers are shorter than those of the other pilot whale species of the western North Atlantic (thus the common name short-finned pilot whale), reaching only one-sixth of the body length or less. The tail is dorsoventrally thickened just in front of the flukes.

The dorsal fin, like that of the Atlantic pilot whale, is one of the species' most distinctive characteristics. It is low in profile, has a long base, and is set far forward on the animal's back.

Short-finned pilot whales are all black on the back sides and most of the belly with an anchor-shaped patch of gray on the chin and a gray area of varying extent and intensity on the belly. These areas are less vivid and extensive than those on Atlantic pilot whales. Younger animals are lighter, often medium gray.

Natural History Notes

Short-finned pilot whales are known to occur in groups of 60 animals or more, though smaller groups are more common. They have been reported pitchpoling (spy-hopping), lobtailing, and—rarely—breaching.

Short-finned pilot whales feed on squid and fish.

May Be Confused With

In the tropical portion of their range, short-finned pilot whales may be confused with pygmy killer whales (p. 138) and many-toothed blackfish (p. 142). They may be distinguished from both species primarily, by their distinctive dorsal fin and the bulbous-to-squarish head. Both pygmy killer whales and many-toothed blackfish have dorsal fins, which are more falcate, slender, and pointed on the tip, and have longer, slenderer heads.

Throughout their range short-finned pilot whales may be confused with false killer whales. The two species may be distinguished by the same differences which distinguish Atlantic pilot whales from false killer whales (p. 91).

In the extreme northern portion of their range,

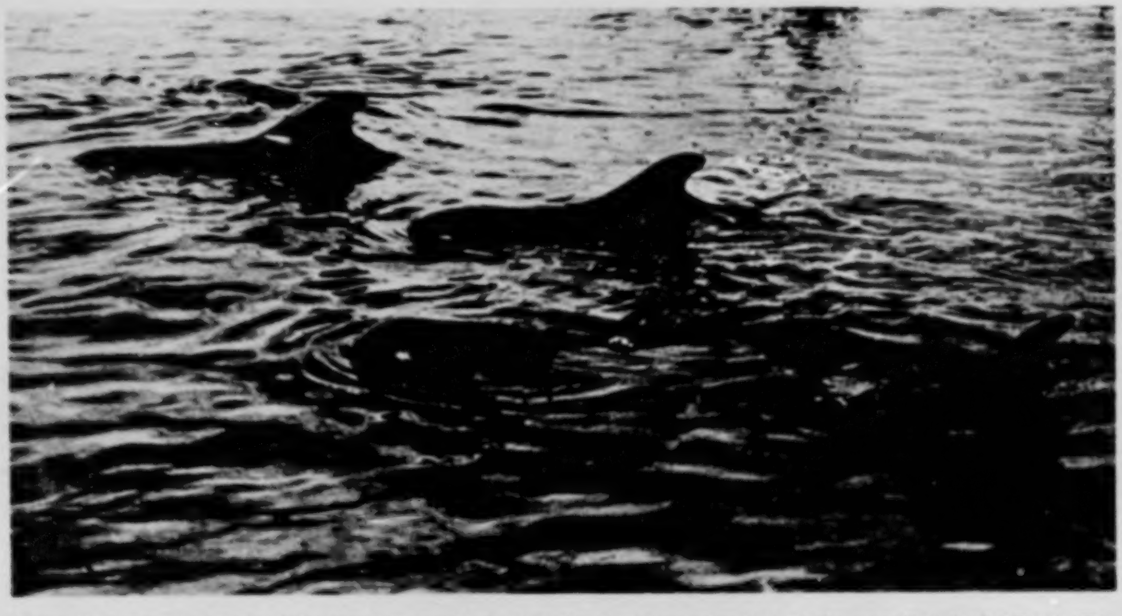


Figure 100. – Short-finned pilot whales stranded in northeastern Florida, shown here swimming in the lagoon at Marineland of Florida. This species, like their northern cousins, the Atlantic pilot whales, have a highly distinctive dorsal fin and a bulbous head (see Figs. 97, 99). In these photos note the variation in the shape of the head. Those of females and immature males are more rounded. Those of adult males are far more blunted. (*Photo courtesy of Marineland of Florida.*)

short-finned pilot whales may be confused with Atlantic pilot whales. The two species may be distinguished by differences itemized on p. 93.

Distribution

Though short-finned pilot whales are known from Delaware Bay, their normal range appears to extend from Bermuda and Cape Hatteras (Virginia in summer) south to the Venezuelan coast. They have been reported for the Gulf of Mexico, the Caribbean, and the islands of the West Indies.

Stranded Specimens

Stranded short-finned pilot whales may be confused with any of the species itemized under living animals. They may be identified as pilot whales primarily by the robust body and bulbous head, often squarish in adult animals, and the broad-based, falcate dorsal fin located well forward on the animal's back. Accurate determination of the pilot whale species involved may require museum preparation of the skull and detailed examination of its characteristics. Preliminary identification may be made, however, on the basis of the following:

Atlantic Pilot Whale	**Short-Finned Pilot Whale**
DISTRIBUTION	
Primarily North Carolina north.	Primarily North Carolina south.
FLIPPERS	
To one-fifth body length, or more.	To less than one-sixth body length.
TEETH	
8-11 per row.	7-9 per row.

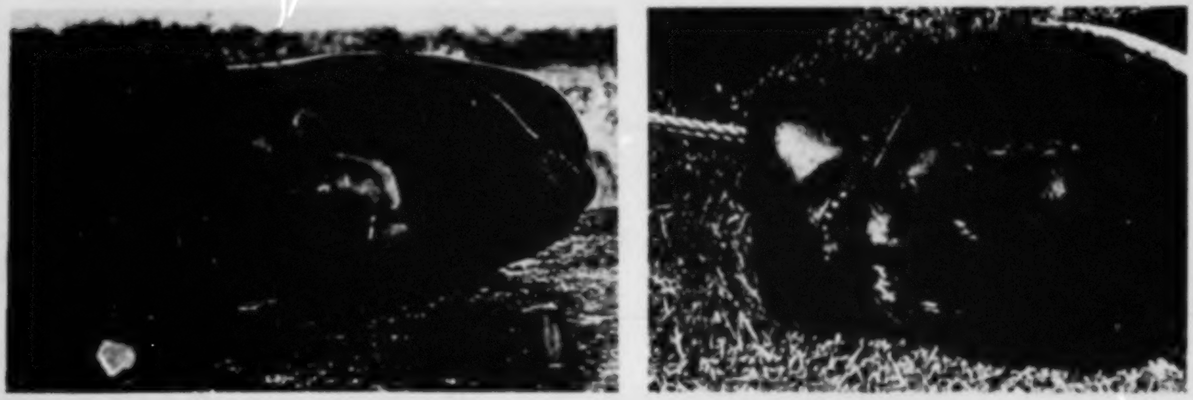


Figure 101. – Short-finned pilot whales have from 7 to 10 teeth in each side of each jaw. The bulbous forehead of the species is far less pronounced in females and immature males (left). The head of mature males is extremely "squarish" and may overhang the lower jaw by several inches (right). ***(Photos from Aquatarium [left] and southeastern Florida by D. K. Caldwell [right].)***

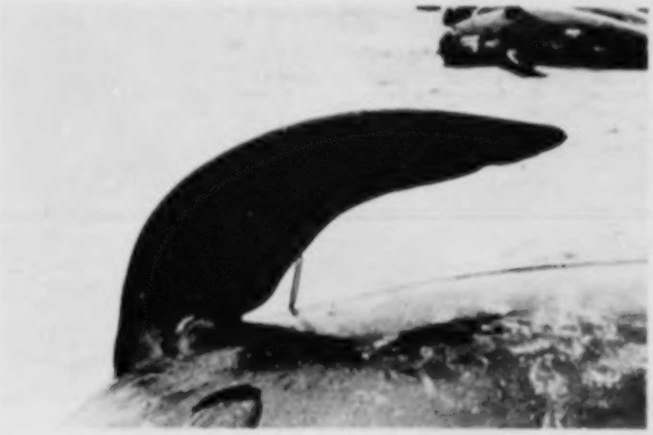


Figure 102. – The flippers of short-finned pilot whales reach only about one-sixth of the body length, while those of the Atlantic pilot whale may be one-fifth the body length or more. Note the length of the flippers of the pilot whale in the background, relative to its overall length. ***(Photo from South Carolina by J. G. Mead.)***

GRAMPUS (T)

Grampus griseus (G. Cuvier 1812)

Other Common Names

Risso's dolphin, gray grampus, white-headed grampus, mottled grampus, Risso's porpoise, hard knocks (St. Vincent), white blackfish (Cape Cod).

Description

Grampus reach a maximum length of about 13 feet (4 m). The body is robust, particularly in front of the dorsal fin, and lacks a distinct beak. The head is somewhat bulbous and is marked on the front by a V-shaped crease with the point downwards, which divides the melon into two parts. The flippers are long and pointed on the tips. The dorsal fin, located at about the midpoint of the body, is tall, to 15 inches (38.1 cm) or more, and distinctly falcate. The body narrows rapidly behind the dorsal fin and the tail stock is quite narrow. The flukes are broad, concaved on the rear margin, and deeply notched.

The bodies of grampus are a uniform light gray at birth. As the animals age, their color darkens to almost black with distinctive regions of grayish white on the belly and chest. The body of older adults is cream white or silver gray, particularly on the head, with numerous scars, presumably from encounters with other grampus and perhaps with the squid, which are one of the species' major food items.

The flippers, dorsal fin, and tail flukes usually remain dark even in adults.

Natural History Notes

Grampus are found in herds of up to several hundred individuals and may be seen "porpoising" (leaping from the water) as they surface to breathe, and breaching. They sometimes ride the bow waves of a boat.

Grampus feed on fish and squid.

May Be Confused With

From a distance grampus are most easily confused with Atlantic bottlenosed dolphins. They may be most readily distinguished by the following differences:

Grampus	**Atlantic Bottlenosed Dolphin**
SIZE	
To 13 feet (4 m).	Rarely to 12 feet (3.7 m); usually less than 10 feet (3.1 m).
BODY COLOR	
Young are uniform light gray; older animals dark with grayish regions on chest and belly; very old animals white and scarred.	Dark gray on body; lighter gray on sides; white or pink on belly; may appear brownish in water.
DORSAL FIN	
To 15 inches (38.1 cm); sharply falcate; pointed on tip.	To 12 inches (30.5 cm); less sharply falcate; pointed on tip.
HEAD COLOR AND SHAPE	
Blunted and creased on front; frequently all white in larger animals.	Uniformly brownish to gray distinctly bottlenosed.
MARKINGS	
Very often extensively scarred.	Less frequently scratched and scarred.

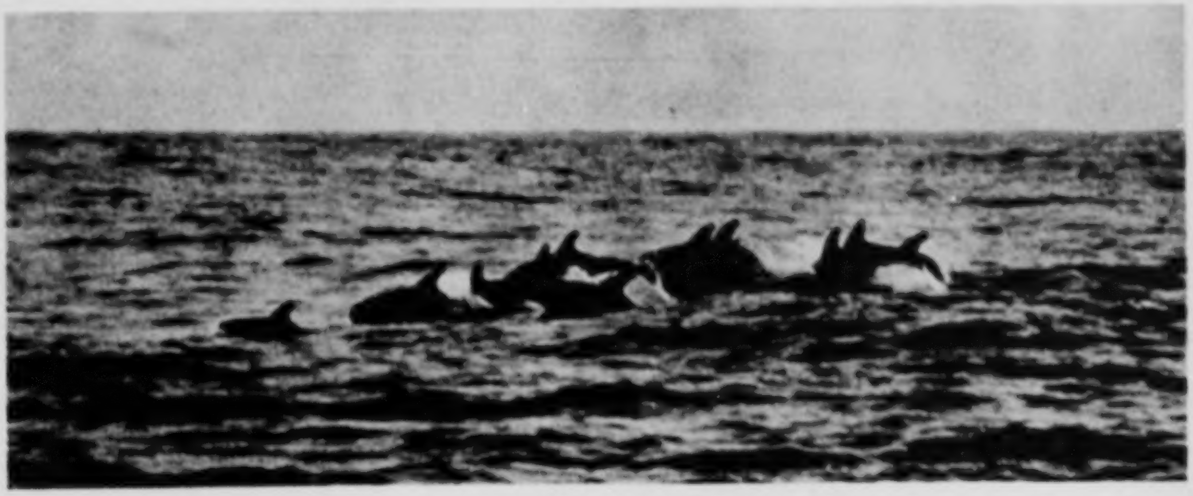


Figure 103.—Grampus are frequently found in small tight groups "porpoising." From a distance they may resemble the Atlantic bottlenosed dolphins, though grampus have taller dorsal fins, blunted beakless heads, and lighter coloration. (*Photo off Washington State by C. Fiscus.*)

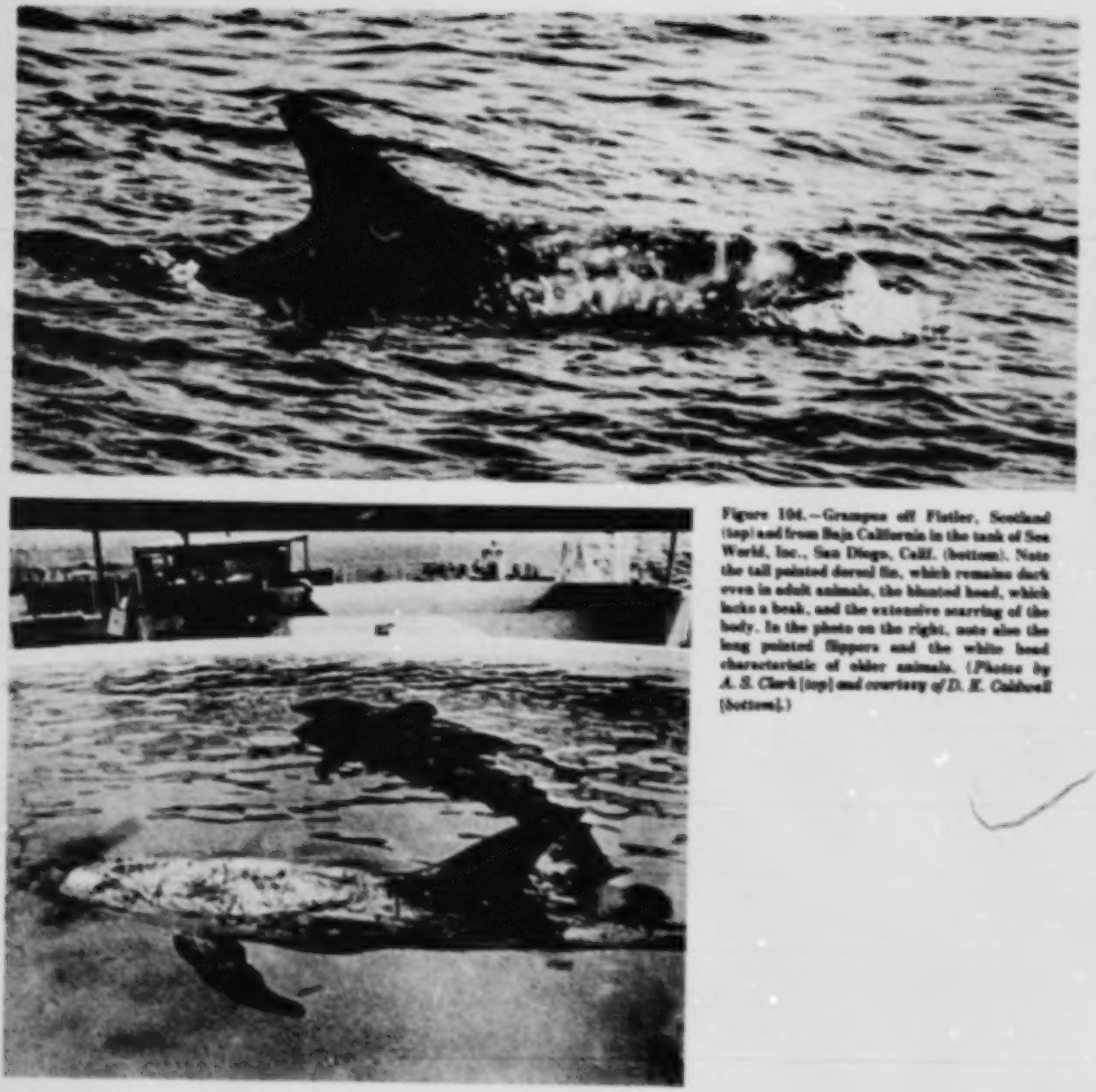


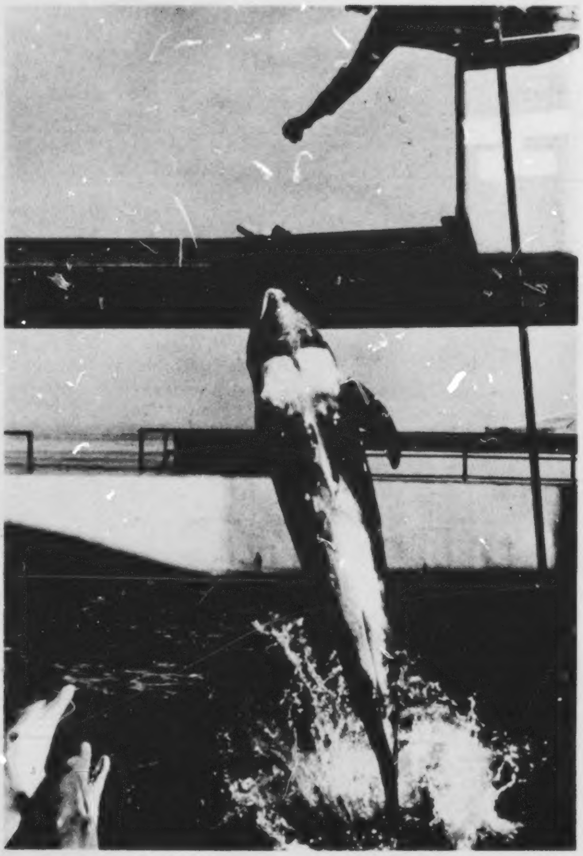
Figure 104.—Grampus off Fetlar, Scotland (top) and from Baja California in the tank of Sea World, Inc., San Diego, Calif. (bottom). Note the tall pointed dorsal fin, which remains dark even in adult animals, the blunted head, which lacks a beak, and the extensive scarring of the body. In the photo on the right, note also the long pointed flippers and the white head characteristic of older animals. (*Photos by A. S. Clark [top] and courtesy of D. K. Caldwell [bottom].*)

Distribution

Grampus are known to be distributed in temperate and tropical seas from at least eastern Newfoundland, south at least to St. Vincent, Lesser Antilles, and in the eastern and northern Gulf of Mexico. The species may not be as rare as the paucity of records suggests. Though they have been seen in Buzzards Bay on several occasions, grampus generally have an oceanic range and, along the Atlantic coast of North America, may be distributed from the Gulf Stream seaward, outside the theater of normal boating traffic.

Stranded Specimens

Stranded grampus are most readily identifiable by 1) the presence of only seven, or fewer, teeth in each side of the lower jaw (many of those teeth may have dropped out in older animals and remaining teeth may be extensively worn) and the absence of teeth in the upper jaw; 2) the presence of a distinct crease or bifurcation in the melon on the extreme front of the head; 3) the presence of numerous scratches and scars all over the body; and 4) the tall, slender, sharply falcate dorsal fin which may be more than 15 inches (38.1 cm) tall.



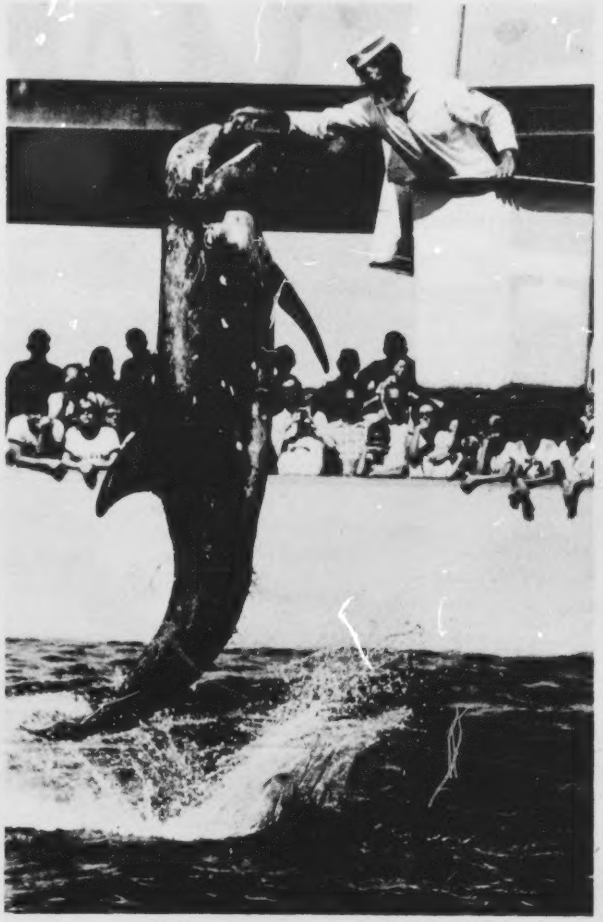


Figure 105. – Grampus, particularly younger animals, have two regions of grayish-white on the ventral surface, one in front of the flippers and another beginning on the belly narrowing towards the tail. These markings closely resemble the ventral marking of pilot whales. (*Photos courtesy of Marineland of Florida.*)

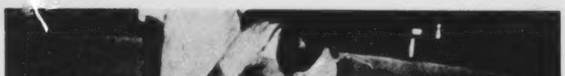


Figure 106. – Stranded grampus can be readily identified. On this captive animal note the blunted head, the distinct crease on the front of the head (see also Fig. 107), and the extensive scarring of the body. (*Photo courtesy of D. K. Caldwell.*)

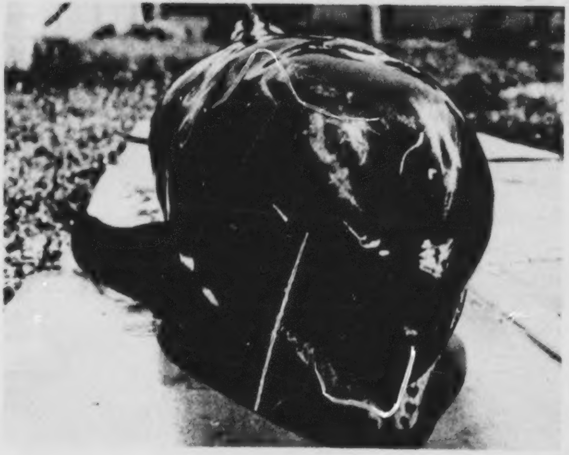


Figure 107. – Grampus have seven or fewer teeth in each side of the lower jaw. (None in the upper jaw.) Many of these teeth may have fallen out of older specimens, and the remaining teeth may be extensively worn. (*Photo courtesy of Marineland of Florida.*)

BELUGA (T)

Delphinapterus leucas (Pallas 1776)

Other Common Names

White porpoise, white whale, belukha, sea canary, marsouin blanc (Quebec).

Description

Belugas reach a maximum overall length of about 16 feet (4.9 m). Males are slightly larger than females. In the western North Atlantic they have been found to grow to greatest lengths in oceanic environments near the southern extremities of their ranges, though they are found in far greater abundance in estuarine areas of the Arctic. Belugas have extremely robust bodies tapering to a distinct "neck" region and a very small head relative to body size.

They do not have a dorsal fin. Instead, along the back just behind the midpoint there is a narrow ridge notched laterally to form a series of small bumps. These ridges may be clearly visible on a swimming animal.

Newborn belugas are brown. As they age, they gradually lighten through slate gray, and by their sixth or seventh year have assumed the all-white coloration characteristic of adult animals.

Natural History Notes

Belugas feed on a variety of fishes (including cod and capelin), on squid, and on a variety of benthic crustaceans.

They are frequently found in shallow bays and river mouths, where the young are born, and occasionally ascend rivers.

May Be Confused With

Because of their limited distribution, all-white coloration and lack of a dorsal fin, belugas are unlikely to be confused with any other species of cetacean.

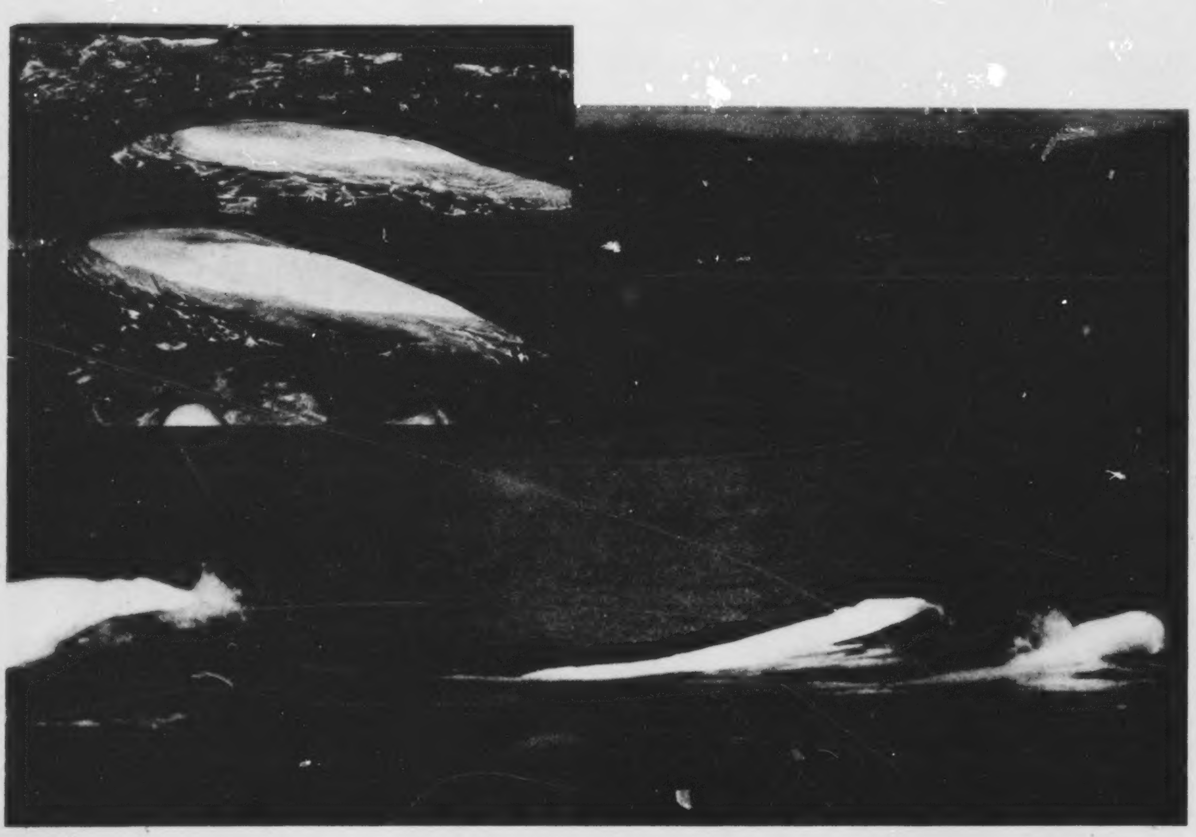


Figure 108.—A group of three belugas surfacing to breathe off northwestern Alaska. The animal to the right has just begun to exhale, the middle animal is in the midst of his inhalation, and the animal on the left has completed his blow and is preparing to dive. Note the all-white coloration and, on the center animal, the small dorsal ridge just emerging from the water. Details of the dorsal ridge are clearly visible in the inset photograph. (*Photos by G. C. Ray and K. G. Hewlett* [*inset*].)

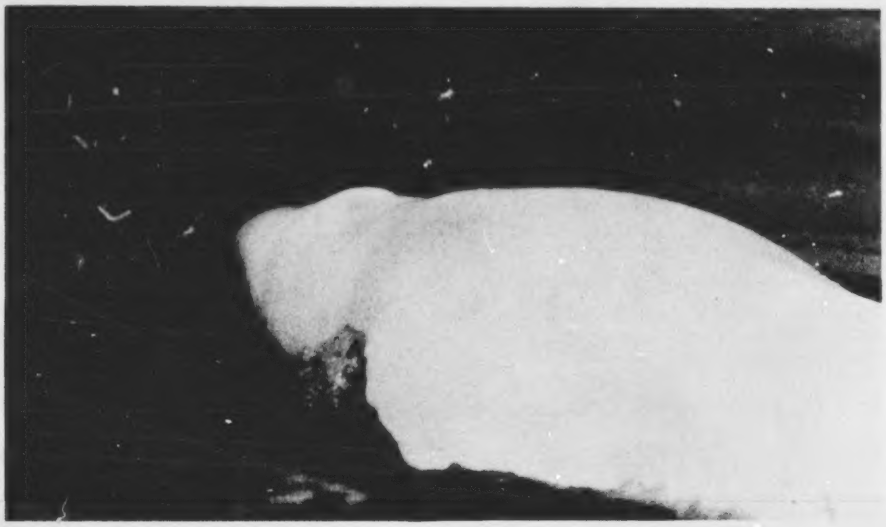


Figure. 109—Note the robust form and the small head of this swimming beluga off northwestern Alaska. (*Photo by G. C. Ray.*)

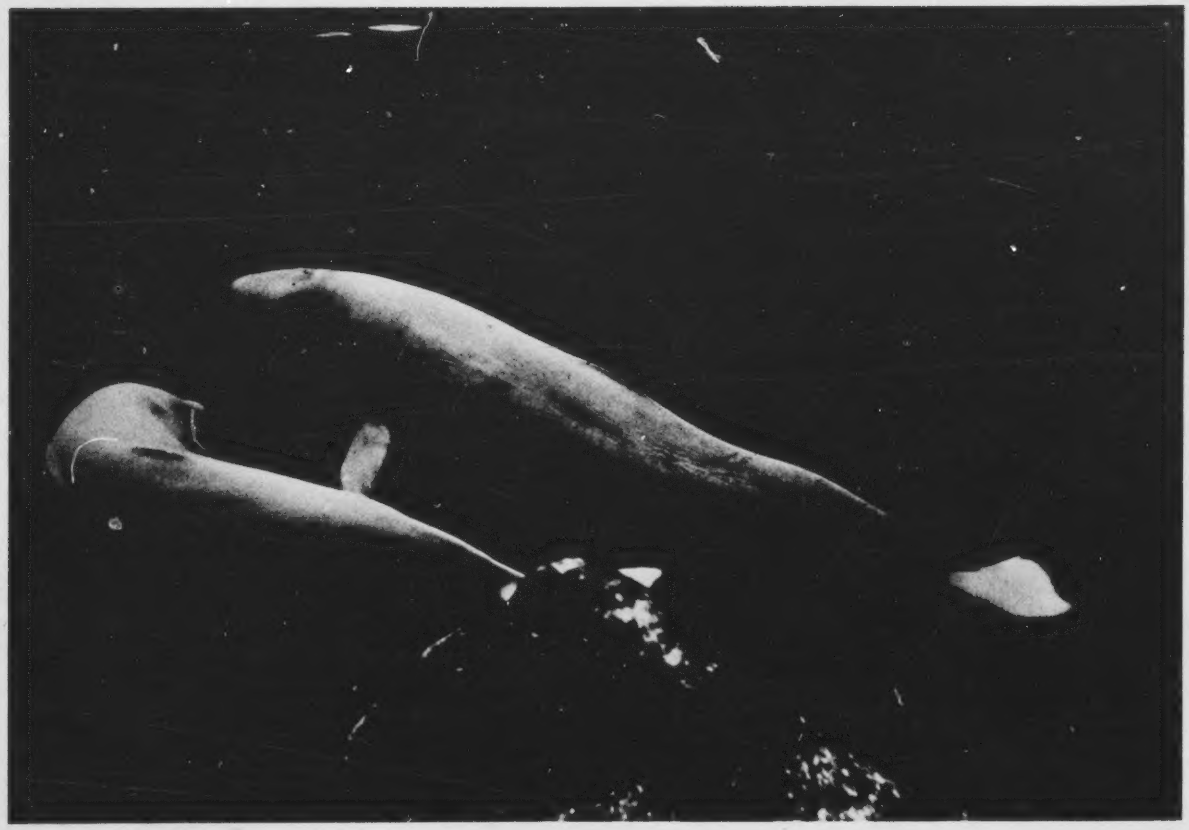


Figure 110.—Captive belugas at Vancouver public aquarium. Note the dorsal ridge, the shape of the head and body, and the unusually shaped flippers. (*Photo by K. C. Balcomb.*)

Distribution

Belugas have been reported from the Arctic Circle south as far as eastern Connecticut, typically in estuarine habitats, though they do range into oceanic regions. They are most abundant from the north shore of the Gulf of St. Lawrence northward. They remain near the Arctic Circle and in Hudson Bay to northern Greenland during winter, undertaking migrations to the south in autumn, straggling to the Maritime Provinces and as far as Connecticut. Belugas are regularly seen in the St. Lawrence and Saguenay rivers throughout late spring and summer. Return migrations to the north take place in spring.

A small population in the estuary of St. Lawrence is resident throughout the year.

Stranded Specimens

Stranded belugas are unlikely to be confused with any other species of cetaceans. The all-white coloration, the robust body shape with a rather small head and a distinct neck region, and the presence of 8-11 teeth in each of the upper jaws and 8-9 in each of the lower jaws permit positive identification.

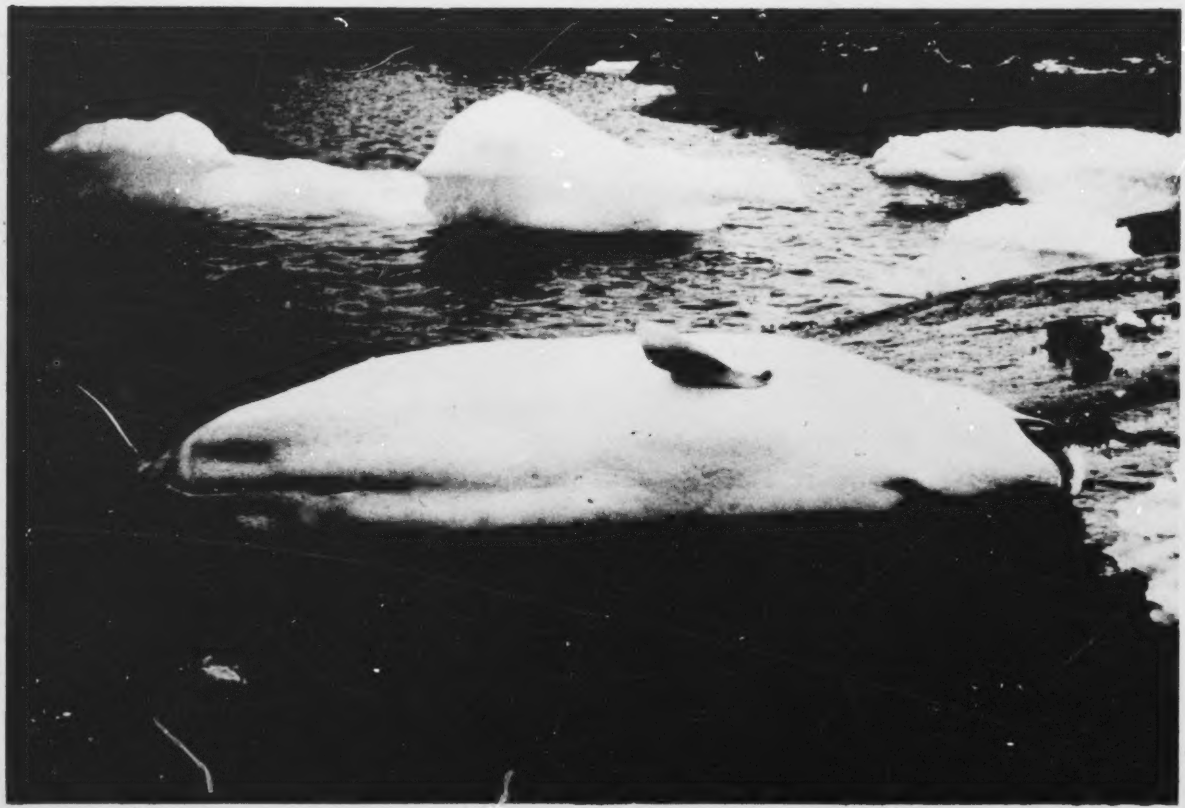


Figure 111.—Ventral view of a beluga harpooned in the northeastern Canadian Eskimo Fishery. Note the very narrow tail, just in front of the flukes, and the robust form of the species. Belugas have 8-9 teeth in each of the lower jaws, and 8-11 in each of the upper jaws. (*Photo by P. F. Brodie.*)

NARWHAL (T)

Monodon monoceros Linnaeus 1758

Other Common Names

Unicorn whale (historical name not currently in use).

Description

The narwhal, also known as the unicorn whale because of the long tusk found on adult males, is one of two medium-sized whales found in the Arctic waters of the northwestern Atlantic. They reach a maximum length of from 15 to 16 feet (4.6 to 4.9 m) excluding the tusk. Newborn calves are approximately 5 feet (1.5 m) long. Narwhals have small rounded heads and a small mouth. Like the other medium-sized whale in the same region, the beluga or white whale, the narwhal has no dorsal fin. Instead, it has a series of bumps, approximately 2 inches (5.1 cm) high along the midline of the back in the half nearest the tail. The ridge created by these bumps may be readily seen on a swimming animal.

The basic coloration of the species changes slightly with age. Young animals are uniformly dark bluish gray on the back but rapidly begin to develop the numerous leopardlike spots on the back and sides characteristic of adults. Those spots rarely extend onto the belly even in old animals.

Narwhals have only two teeth. In the females, these teeth rarely emerge from the gums. In males, one and sometimes both of those teeth grow out the front of the snout, spiraling in a left-hand or sinistral direction, and may reach a length of 9 feet (2.7 m). One or two tusks may also be exposed, however, in females.

Natural History Notes

The function of the tusk in male narwhals is unknown, but it was this feature of the animal that earned it the name "unicorn whale" and resulted in its extensive hunting by whalers. During their annual migrations narwhals may congregate but are commonly found in groups of 10 or fewer during the rest of the year.

Narwhals feed on a variety of organisms, including cod, rockfish, flounder, and crabs, but their diet consists primarily of squid.

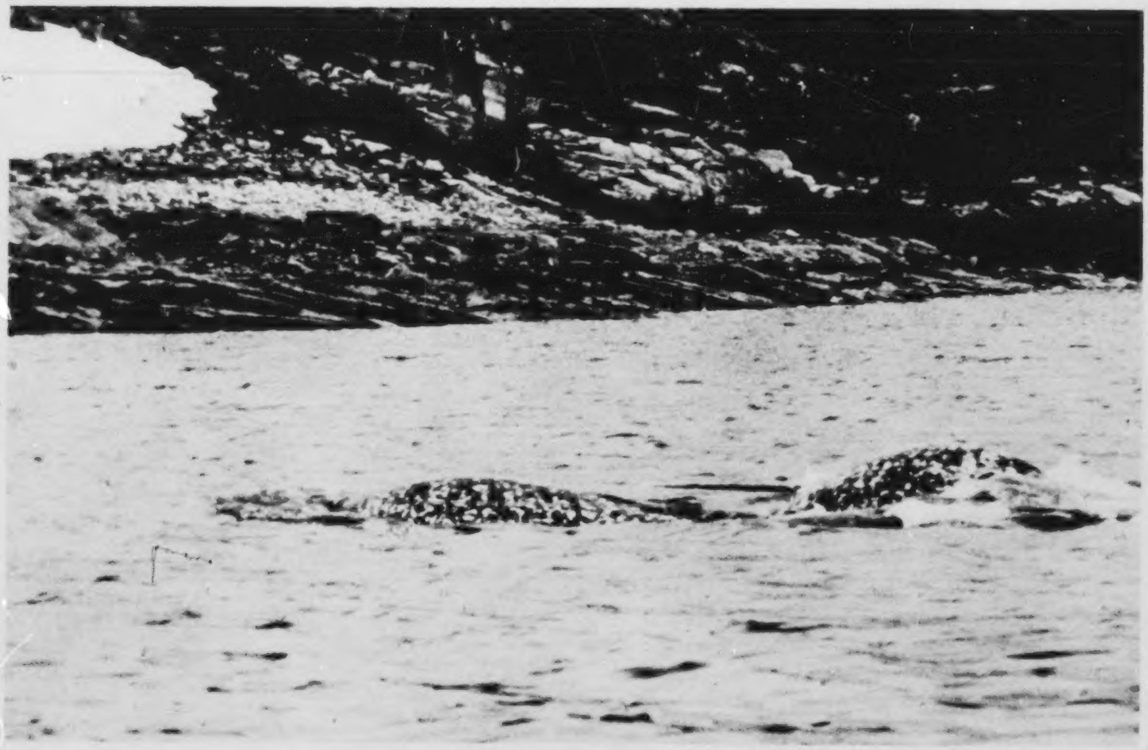


Figure 112. – In this photo of narwhals, the origin of the name "unicorn whale" is apparent. The animal at the right, an adult male, exposes his tusk as he surfaces aggressively to breathe. Even when this feature is not observed, however, the narwhals' mottled gray coloration makes them easy to distinguish from the all-white belugas, with which they share a common range. Note also the dorsal ridge on the animal to the left. (*Photo by D. Lusby, courtesy of the Sea Library.*)

Distribution

Narwhals are found in the high arctic seas of the western North Atlantic, primarily in Lancaster Sound and its fringes. It has been noted that they are found in isolated pockets within that range and are not, like the beluga, widely distributed.

Narwhals make annual migrations in response to the movement of the ice. During the fall as the ice begins to form, the whales migrate to the south, sometimes reaching the Labrador coast. In the spring they return to the pack ice.

May Be Confused With

Narwhals are so different in coloration from the only medium-sized cetacean which shares its range and habitat—the beluga—that the two are highly unlikely to be confused. Belugas are usually all white or light slate gray in color, while narwhals are very much darker, ranging from bluish gray to brownish, and are often covered with light leopardlike spots. Furthermore, the body of the beluga is more robust.

Further, swimming narwhals frequently buck their heads up to breathe, a behavior which makes the tusk of adult males visible and permits positive identification.

Stranded Specimens

Stranded narwhals should be easily identifiable by the distinctive coloration and the unique characteristics of the teeth. In adults, one or two of the teeth may develop into the long, left-hand spiraling tusk, shown in Figures 112 and 114. Immature animals have no teeth which are emerged.

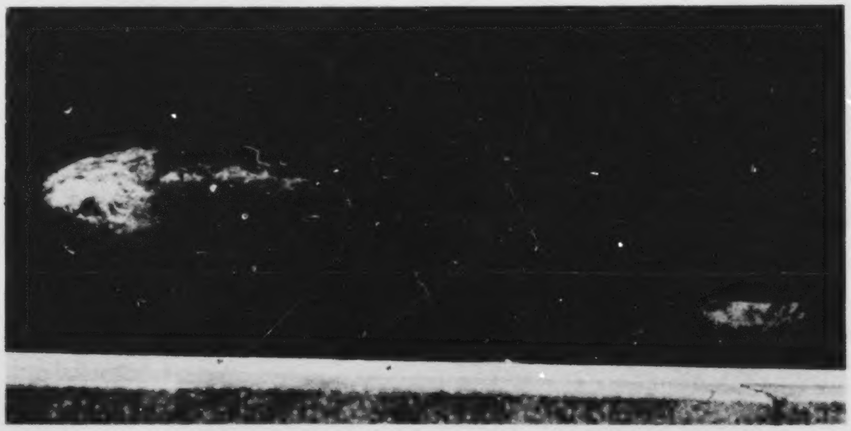


Figure 113.—A juvenile narwhal in a tank at New York Aquarium. Though newborn animals are dark bluish gray on the back, fading to white on the belly, note that the mottled gray coloration characteristic of adults is well developed even in relatively young animals. The white region on the head is lanolin cream, applied to protect the animal's skin during transport. (*Photo by H. E. Winn.*)

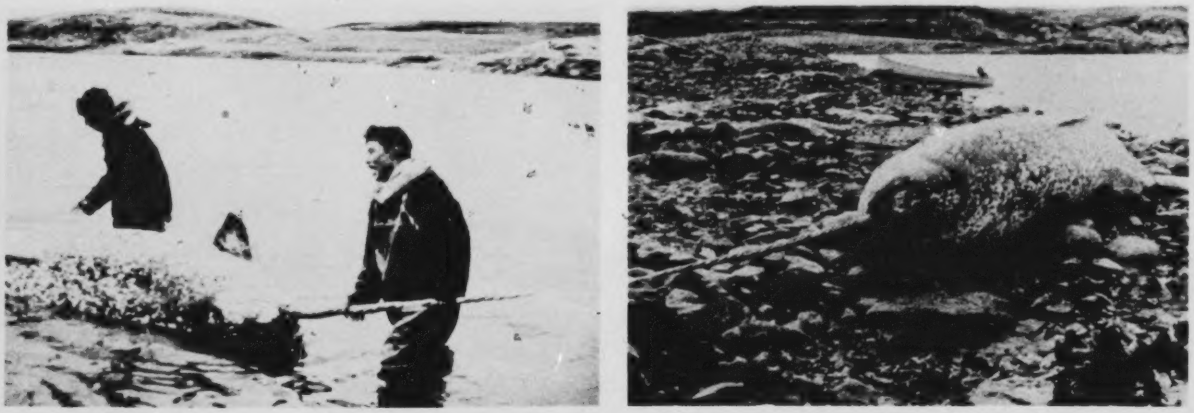


Figure 114.—A stranded male narwhal. The long unicorn tusk is the spiral extension of one of the two teeth, though the other may be exposed above the gums in males and may even develop into a second long tusk; both teeth of females are normally buried in the gums and rarely emerge. Note the highly distinctive dorsal ridge, near the midpoint of the back. (*Photos by D. Lusby, courtesy of the Sea Library.*)

ATLANTIC SPOTTED DOLPHIN (T)

Stenella plagiodon (Cope 1866)

Other Common Names

Spotter, Gulf Stream spotted dolphin, spotted porpoise, long-snouted dolphin.[11]

Description

Atlantic spotted dolphins reach a maximum adult length of 7.5, perhaps 8 feet (2.3 to 2.4 m). They are generally more robust in body shape than the other species of *Stenella*, closely resembling Atlantic bottlenosed dolphins in that regard, though the Atlantic spotted dolphins tend to be more slender.

The dorsal fin is distinctly back-curved and pointed on the tip, also closely resembling that of the Atlantic bottlenosed dolphin.

As the common name suggests, the Atlantic spotted dolphins are marked dorsally with numerous grayish-white spots on a darker background and ventrally with dark spots on a lighter background, though the extent of the spotting and the additional details of coloration change with age.

Immature animals lack spots completely. They are dark gray or purplish gray on the back, becoming lighter gray on the sides and white on the belly. The cape along the back is distinctly separated from the lighter gray coloration of the sides. The flippers and the trailing edge of the flukes are darker than the rest of the body.

As they age, the Atlantic spotted dolphins develop grayish-white spots, first low on the sides, spreading upward. During this stage, the cape becomes less distinct, and dark spotting begins to develop on the belly, the spots increasing in number with increasing age. In adult animals, the belly is often extensively covered with dark blotches but never becomes completely black. The lips may be white, and the beak is characteristically tipped with white, a feature which may aid in identification at sea.

The Atlantic spotted dolphins have a spinal blaze and a light line which extends from the flipper to the eye.

Natural History Notes

Little is known of the natural history of the Atlantic spotted dolphins. The species occurs in herds of up to several

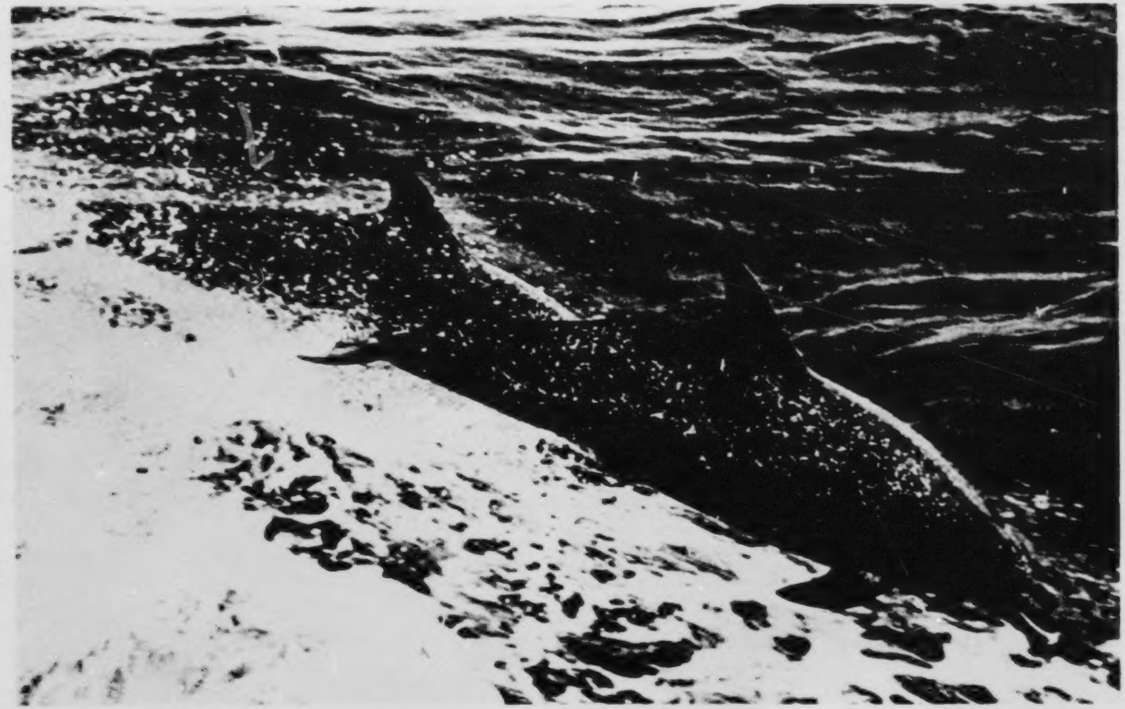


Figure 115.—Atlantic spotted dolphins beside a research vessel off Beaufort, N.C., September 1965. Adults of this species can be identified by the spotting pattern and the white coloration of the lips. (See also bridled dolphin, p. 108.) Young animals which lack spots may be confused with the Atlantic bottlenosed dolphins though they are smaller and are purplish gray on the back. (*Photo by G. T. Green.*)

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[11] See also p. 110. The common name "long-snouted dolphin" was once widely used for this species. It is now more frequently used for *Stenella longirostris*, also known as the spinner dolphin.

hundred individuals, though groups of 50 or fewer (6-10) are more common. They are often seen jumping clear of the water and habitually ride the bow wave of moving vessels. As they do, the distinct cape or band of purplish gray on the back of younger animals and the spotting pattern of older animals may be visible.

Atlantic spotted dolphins feed primarily on squid but may also take carangid fishes, small eels, herring, or anchovies.

May Be confused With

Atlantic spotted dolphins, particularly young animals, may be easily confused with Atlantic bottlenosed dolphins because of the similarities in color pattern and general body shape. However, the Atlantic spotted dolphins have considerable purplish gray in their background colors and the Atlantic bottlenosed dolphins are more dark gray to brownish gray. This along with considerable differences in the overall sizes of the two species should permit positive identification. In general, the key differences between spotted and bottlenosed dolphins are as follows:

Atlantic Spotted Dolphin	**Atlantic Bottlenosed Dolphin**
MAXIMUM SIZE	
To 7.5-8 feet (2.3-2.4 m).	To 8-10 feet (2.4-3.1 m) inshore, to as much as 12 feet (3.7 m) offshore.
BODY COLOR	
Dark purplish gray on back; lighter gray on sides and belly; body becomes increasingly spotted with age.	Dark gray on back; lighter gray on sides; white or pink on belly (old animals may have a few spots on belly, but most are not spotted).
HEAD AND BEAK	
Head more slender; beak longer; lips and top of snout often white.	Head robust; beak short; beak usually uniformly gray (older animals' beak may be white at tip).
NORMAL DISTRIBUTION	
Usually found more than 5 miles offshore; most common inside 100-fathom curve.	Usually more coastal, often ascending rivers and entering lagoonal and estuarine areas.

Young Atlantic spotted dolphins are so similar in appearance to the Atlantic bottlenosed dolphins that the frequent reports of mixed schools of the two species are probably occasioned by groups of spotted dolphins which include some young, still unspotted animals.

Atlantic spotted dolphins might also be confused with bridled dolphins. The two can be most readily distinguished by the following characteristics:

Atlantic Spotted Dolphin	**Bridled Dolphin**
BODY SHAPE	
Usually robust, often like that of the Atlantic bottlenosed dolphin.	More slender, more like that of the Atlantic striped dolphin.
BODY COLOR	
Spotted; purplish gray on back; lighter gray on sides and belly becoming increasingly spotted with age. As animals becomes more spotted, cape become less distinct. Body has spinal blaze and light line from flipper to eye.	Spotted; side of head light gray; body has stripe from flipper to corner of mouth, though the stripe tends to fade as spotting increases. Cape on top of head more distinct that on Atlantic spotted dolphin. Body has no spinal blaze.

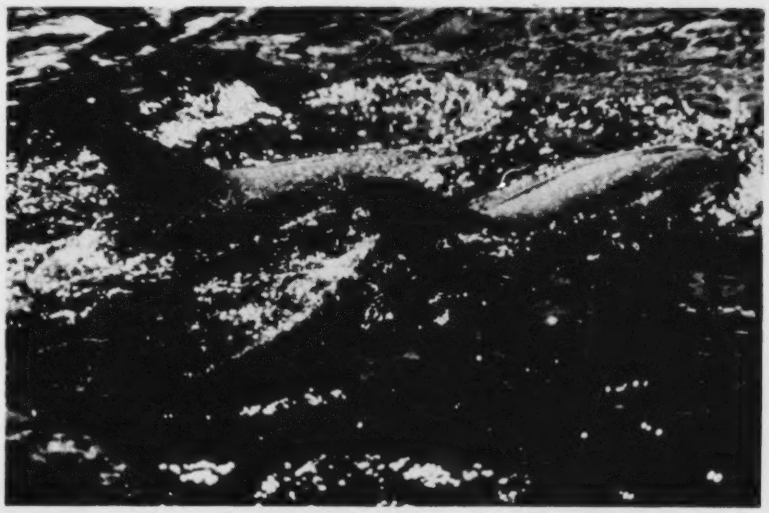


Figure 116.—A side view of two female Atlantic spotted dolphins from off St. Augustine, Fla. in the tank at Marineland of Florida. Note the tall falcate dorsal fin, pointed on the tip and varying slightly in shape between the two individuals, and the spots on the body. (*Photo by S. Leatherwood.*)

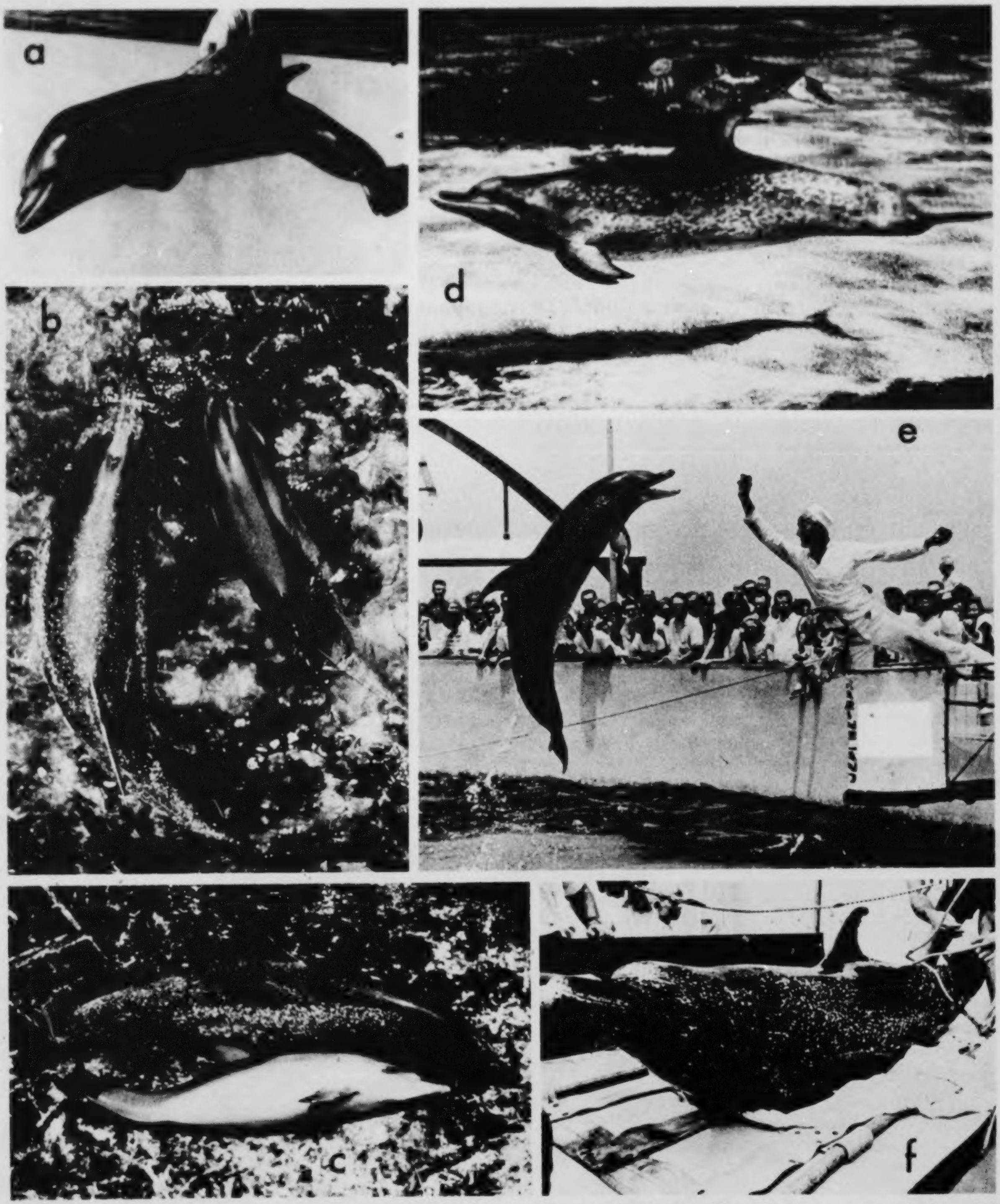


Figure 117.—A series showing the development of the color pattern of the Atlantic spotted dolphins from Florida. Newborn or young animals are dark purplish gray on the back, grading to immaculate white on the belly. As they mature, animals develop light spots, first on the lower sides, then higher on the back, and dark spots on the belly. As spotting increases, the cape becomes less distinct. (*Photos by A. Solis* [*a*], *D. K. Caldwell* [*b, c*], *and courtesy of Marineland of Florida* [*d, e, f*].)

At sea the Atlantic spotted dolphins may also be confused with rough-toothed dolphins (p. 135).

Distribution

Atlantic spotted dolphins are a common species in the continental waters of the tropical and warm temperate western North Atlantic. Although they are far more abundant south of Cape Hatteras, they have been reported from the latitude of Cape May, N.J. (some fishermen claim to have seen them even further north) south through the Gulf of Mexico and the Caribbean to Venezuela. Atlantic spotted dolphins may be replaced around the West Indies by the bridled dolphin.

Within this range, the Atlantic spotted dolphins appear to be generally restricted to the waters outside the 100-fathom curve, most commonly more than 5 miles offshore. However, populations in the Gulf of Mexico move inshore in the late spring, and may approach close to shore during spring and summer.

Stranded Specimens

Stranded Atlantic spotted dolphins may be difficult to distinguish from bridled dolphins. If the color pattern is still clearly visible, the differences in coloration described above, particularly those of the head, and the presence or absence of a spinal blaze may be used. But since external appearance other than coloration are often very similar, specimens should be photographed from as many aspects as possible and the entire specimen or the roughed-out complete skeleton transported to a museum for preparation and examination. Tooth counts recorded for the two species to date are also very similar.

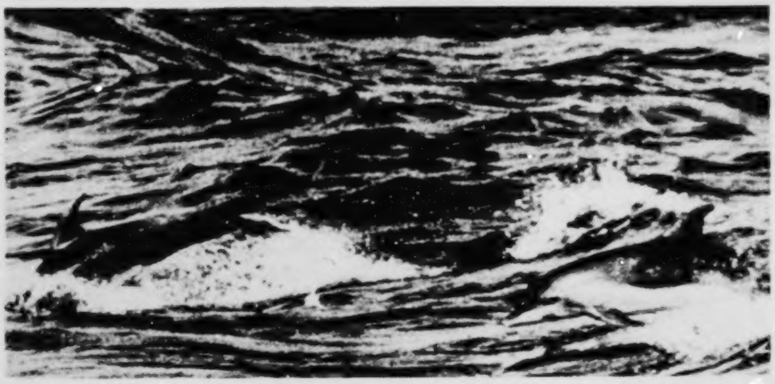


Figure 118—Juvenile Atlantic spotted dolphins at sea in the southeastern Caribbean. Although spotters can be either relatively short-snouted and chunky or long-snouted and slightly built, the spinal blaze, flipper-to-eye stripe, white lips, and falcate dorsal fin can be used to identify them. (*Photo by D. Poppe.*)

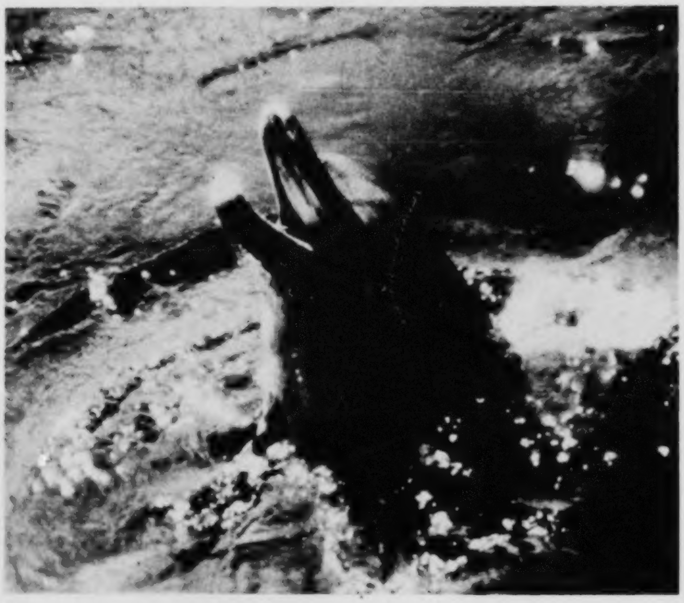


Figure 119.—A captive Atlantic spotted dolphin from off St. Augustine, Fla. This species has from 30 to 36 teeth in each upper jaw and from 28 to 35 in each lower jaw, fewer than all other *Stenella* except perhaps the bridled dolphin, fewer than the saddleback dolphins, but more than the Atlantic bottlenosed dolphins. (*Photo by S. Leatherwood.*)

BRIDLED DOLPHIN (T)

Stenella frontalis (G. Cuvier 1829)

Other Common Names

Bridled spotted dolphin, Cuvier's dolphin, gamin (St. Vincent), bridled porpoise.

Description

Bridled dolphins, the second species of spotted dolphins in the western North Atlantic, reach an adult length of at least 7 feet (2.1 m). Like the other, the Atlantic spotted dolphin (p. 104), bridled dolphins are characterized by light grayish-white spots on the dark dorsal portions of the body and dark spots on the light ventral surface. Other details of the coloration differ somewhat. Bridled dolphins are dark gray on the back, fading to lighter gray on the sides and belly. They lack the spinal blaze characteristic of Atlantic spotted dolphins. Except on the head, the border between the back and side colors is indistinct. On the head, the cape (the dark color of the top of the head) is distinct. In the light gray of the side of the head are the markings from which the species derives its common name, "bridled dolphin." These are a black circle around the eye with an extension to the junction (apex) of the rostrum and the melon (present in nearly all dolphins) and a broad black stripe from the origin of the flipper to the corner of the mouth. This mouth-to-flipper stripe tends to fade as spotting increases. Both the upper and lower lips are white or pinkish.

Natural History Notes

Virtually nothing is known of the natural history of bridled dolphins except that they have been observed in small herds of from 5 to 30 individuals and sometimes ride the bow wave of a vessel.

May Be Confused With

At sea, bridled dolphins may be confused with Atlantic spotted dolphins or spinner dolphins. Differences by which they may be distinguished from the first are tabularized on p. 105. Differences between spinner and bridled dolphins permitting identification at sea are as follows:

Bridled Dolphin	**Spinner Dolphin**
COLORATION	
Distinct cape on top of head; side of head light gray; distinct stripes from flippers to corner of mouth and from dark circles around eye to apex of melon.	Dark gray on back; tan or yellowish tan on sides; white on belly.
BEAK	
Shorter and more slender; all black; lips white.	Extremely long and slender; dark gray to black on top, white below; lips black.
DORSAL FIN	
Uniformly dark gray.	Often lighter gray in middle, dark around border.

Distribution

Bridled dolphins occur in tropical and subtropical waters primarily near coastal areas and islands, but are best known from the West Indies. They have been reported from the Antilles, from Texas, and from Florida north to North Carolina. It has been speculated that this species replaces the Atlantic spotted dolphin around the West Indies.

Bridled dolphins have not yet been described from the South American coast.

Stranded Specimens

Bridled dolphins have from 29 to 34 teeth in each upper jaw and from 33 to 36 in each lower jaw. They can be distinguished from spinner dolphins, which have 46-65 teeth in each jaw, by this character alone.

They may be distinguished from spotted dolphins only if the color pattern of the head is clearly visible. If it has faded, the specimen will probably require museum preparation and examination before it can be positively identified.

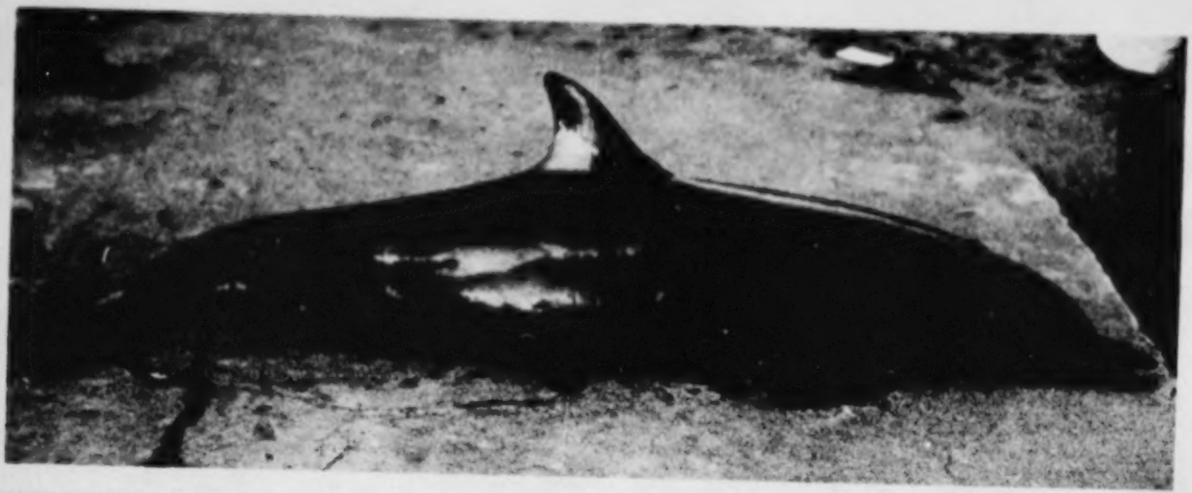


Figure 120.—A bridled dolphin harpooned in the commercial whale fishery off St. Vincent, Lesser Antilles. If the color pattern has faded, bridled dolphins cannot be readily distinguished from the Atlantic spotted dolphins and must be sent to a museum for preparation and examination of the skull and skeleton. (*Photo by W. A. Huck, courtesy of Marineland of Florida.*)

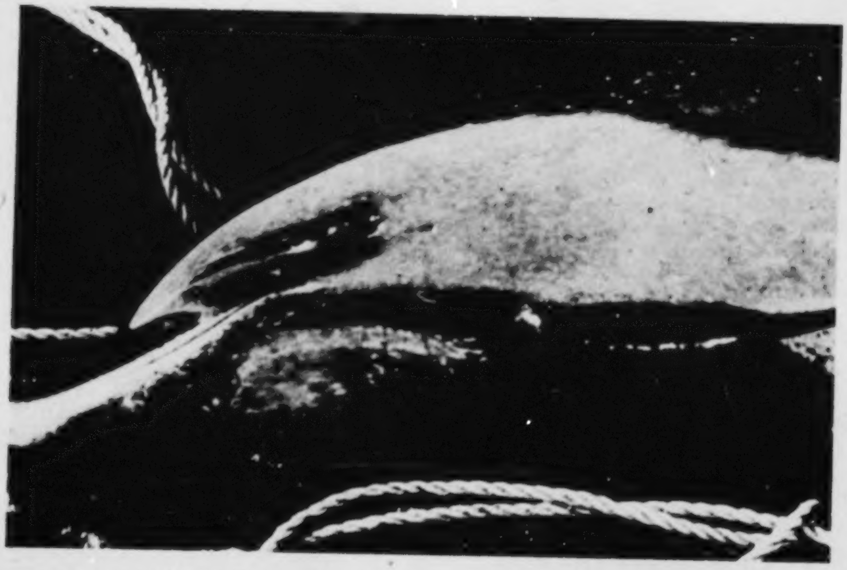


Figure 121.—A bridled dolphin from St. Vincent, Lesser Antilles. Note the dark cape of the back, the lighter side, and the dark stripes from the eye to the snout (found in most dolphin species) and the flipper to the gape, a feature which fades as the animal's spotting increases. Together these two features comprise the "bridle" from which the common name derives. Note also the white lips and the white lower jaw. (*Photo by J. R. Sullivan.*)

SPINNER DOLPHIN (T)

Stenella longirostris Gray 1828

Other Common Names

Long-snouted dolphin, long-beaked porpoise, spinner porpoise, rollover (St. Vincent).

Description

Spinner dolphins reach a maximum length of about 7 feet (2.1 m). The body is slender. The beak varies from extremely long and slender (Fig. 123) to relatively short (Fig. 125); the beak is usually dark on top and clean white below, though there may be some white above. The tip of the snout and the lips are distinctly black, while those of both species of spotted dolphins are light. The back is dark gray to black, the sides are tan to yellowish brown, and the belly is white. Some of the larger animals appear almost all black with faint, light speckling. The dorsal fin is generally moderately falcate, but may be almost triangular in adult males. It is often a lighter gray near the middle, bordered by black or dark gray.

Natural History Notes

Spinner dolphins derive their common name from their habit of leaping clear of the water and spinning on their longitudinal axis. The reasons for this behavior are unknown. Individuals may rotate 2 times, or more, in one leap but spinning behavior is not observed as frequently in the western North Atlantic as it is in the eastern tropical Pacific.

Spinner dolphins occur in herds of up to several hundred individuals and are often seen jumping clear of the water, working the sea surface into a froth. They frequently come to the bow of a boat from considerable distances to ride in the bow wave and may ride for protracted periods.

May Be Confused With

Spinner dolphins may be confused with saddleback dolphins. Both species occur in large herds and often come to moving vessels to ride the bow wave. The two can be distinguished, however, by these differences:

Spinner Dolphin	**Saddleback Dolphin**
COLORATION	
Dark gray on back; tan or yellowish tan on sides; white on belly; lacks crisscross pattern on sides; distinct black stripe from flipper to eye.	Dark gray to brownish gray on back; white on belly with crisscross or hourglass pattern of tan to yellow on sides; distinct black stripe from flipper to middle of lower jaw.

Spinner dolphins might also be confused with bridled dolphins, but may be distinguished by the differences summarized on p. 108.

Distribution

Spinner dolphins are distributed in oceanic and coastal tropical waters. Though one specimen was collected from South Carolina, they have been more frequently reported from both coasts of Florida, the Gulf of Mexico, the Caribbean, and the West Indies. They have also been

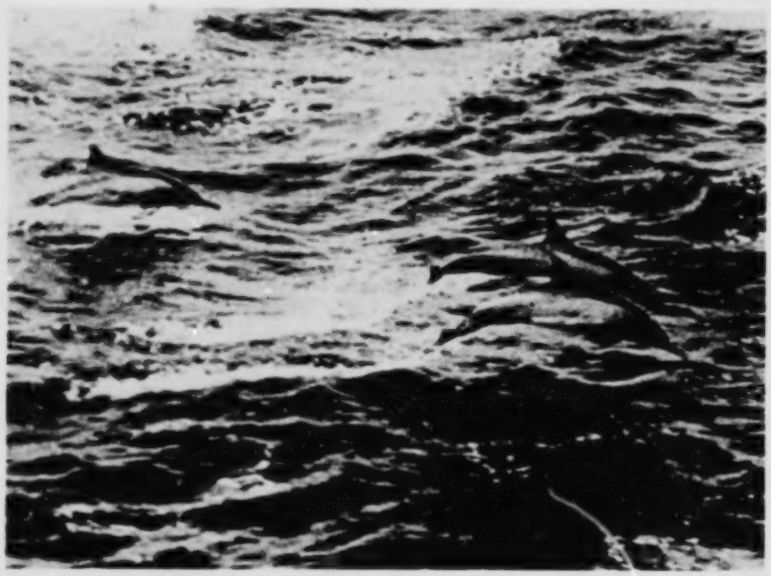


Figure 122. – Spinner dolphins occur in large herds in tropical waters. As illustrated by these photos of animals off Venezuela in 1969, spinner dolphins often leap clear of the water and may come to a moving vessel from considerable distances away to frolic in its bow wave. (*Photo by M. Bartlett.*)

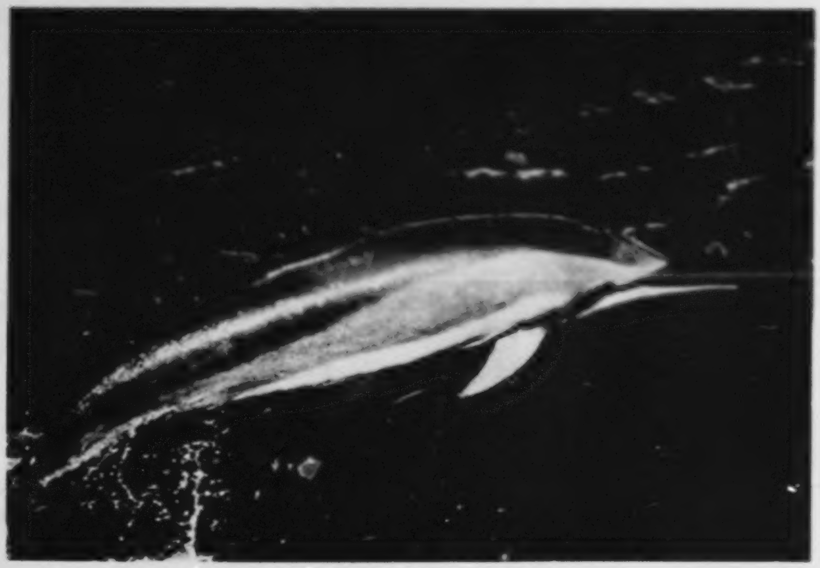


Figure 123.—A spinner dolphin jumping close beside a research vessel off the Virgin Islands. The distinctive color pattern (gray on the back, tan on the sides, and white on the belly) is clearly visible. The black-tipped rostrum and the black lips are key characters to this species. (*Photo by C. McCann.*)

reported from Venezuela. They are said to be the most abundant dolphin species from the southeastern Caribbean. Some Pacific spinner dolphins are distributed in oceanic zones. Atlantic spinners may be abundant in offshore tropical waters as well.

Stranded Specimens

Stranded spinner dolphins are most readily identified by the extremely long rostrum and the 46-65 teeth, far more than any other species of dolphin. Note that the striped dolphins may have from 43 to 50 teeth per side in each jaw. However, striped dolphins are decidedly larger (to about 9 feet [2.7 m]), have a shorter beak, and are distinctly marked with dark stripes from the eye to the flipper, from the eye to the anus, and from the area behind the dorsal fin forward, towards but not reaching the head.

Saddleback dolphins also have from 40 to 50 teeth on each side but are also easily distinguishable by the differences in coloration discussed above for living animals at sea.

Figure 124.—Spinner dolphins are active bow riders and may stay with a vessel for long periods of time. (*Photo from off the Virgin Islands by H. E. Winn.*)

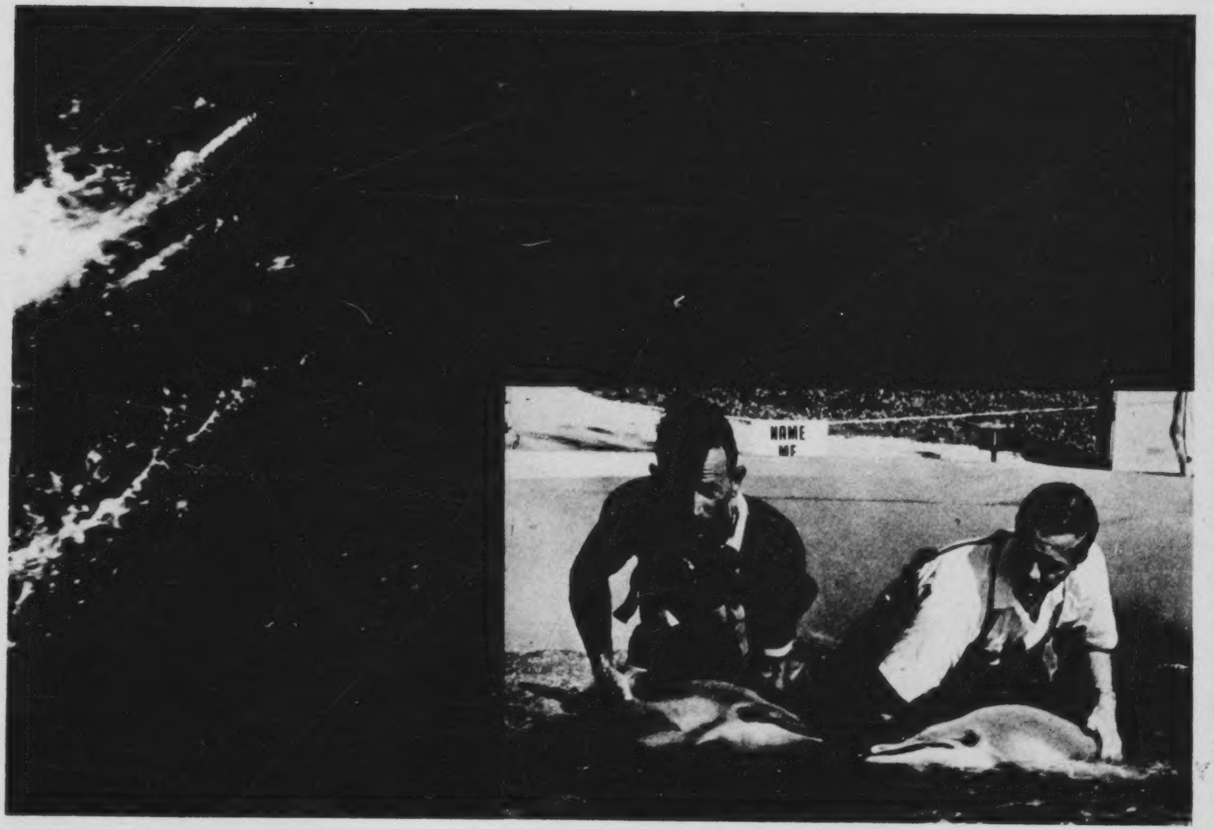


Figure 125.—Although all spinner dolphins so far examined have the same basic characteristics, the degree of expression of those characteristics varies from individual to individual or area to area. These small short-snouted dolphins (those on bottom stranded near St. Petersburg, Fla. and maintained alive by the Aquatarium in that city, and those on top photographed at sea. off the northwestern Africa coast in 1972) are spinners, although their classification is uncertain. There may be several species or geographical races of spinners in the Atlantic. (*Photos courtesy of W. F. Perrin* [*top*] *and Aquatarium* [*bottom*].)

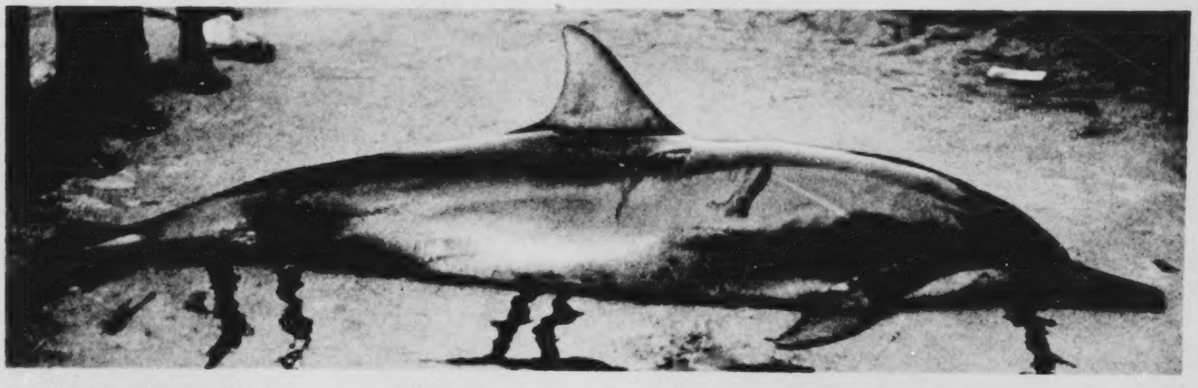


Figure 126.—A spinner dolphin harpooned in the fishery at St. Vincent, Lesser Antilles. Even after subtle aspects of the color pattern have faded, this species can be readily identified by the 46-65 teeth in both upper and lower jaws and by the distinctly black lips and black-tipped rostrum. (*Photo by W. A. Huck, courtesy of Marineland of Florida.*)

STRIPED DOLPHIN (T)

Stenella coeruleoalba (Meyen 1833)

Other Common Names

Euphrosyne dolphin (*Stenella styx*), Meyen's dolphin, blue-white dolphin, Gray's dolphin, striped porpoise, streaker porpoise.

Description

The striped dolphin is a widely distributed relative of the spinner and the Atlantic spotted dolphins, though it more closely resembles saddleback dolphins than either of these two species. It reaches a maximum length of about 9 feet (2.7 m) and is characterized by a series of distinctive black stripes. One band of black begins near the eye and extends down the side of the body to the area of the anus. (A small secondary stripe originating with this band turns off and disappears in the white coloration of the side just above the flippers.) A second band of black extends from the eye to the flipper. Some workers have contended that striped dolphins are separable into distinct species depending on whether the eye-to-flipper stripe has one (*S. coeruleoalba*) or two (*S. styx*) components.

Most individuals have an additional distinctive finger of black coloration which extends from the black coloration behind the dorsal fin forward towards and about halfway to the eye. It is this feature which is most distinctive in animals riding the bow or leaping clear of the water. The back is dark gray to bluish gray, the sides are lighter gray, and the belly is white.

Natural History Notes

Though little is known of this species, it has been reported in herds of up to several hundred individuals and apparently exhibits behaviors very similar to those of the saddleback dolphins (p. 116), frequently jumping clear of the water. Atlantic and Mediterranean animals have been reported to bow ride.

May Be Confused With

This species is most likely to be confused with the saddleback dolphin, which it closely resembles. The two may be distinguished by the following characteristics:

	Striped Dolphin	**Saddleback Dolphin**
LENGTH	To about 9 feet (2.7 m) or more.	Seldom greater than 7.5 feet (2.3 m).
COLORATION	Back from light gray to dark gray to bluish gray; sides gray; belly gray or white; distinctive black lateral stripping from 1) eye to flipper, 2) eye to anus, and 3) dark color behind dorsal fin forward, towards but not reaching head.	Back basically black or brownish; distinct white chest or belly patch; hourglass or crisscross pattern on the sides; distinct black stripe from flipper to middle of lower jaw.

Distribution

Striped dolphins are widely distributed in the temperate, subtropical, and tropical seas of the western North Atlantic. They have been reported from at least Halifax, Nova Scotia, south as far as Jamaica. (Additional records, purportedly from southern Greenland, involved a museum specimen. Since striped dolphins of the eastern North Atlantic are rare north of England, the species occurrence near Greenland would be highly improbable.) Individuals have recently been reported from the Gulf of Mexico.

Despite this wide distribution, striped dolphins appear to prefer warmer waters and are probably normally confined to the Gulf Stream or the waters off the continental slope. Individuals appearing to the north of the range seem to have ventured northward with fingers of warm water.

Stranded Specimens

Stranded striped dolphins should be readily identifiable by the highly distinctive patterns of lateral striping discussed above for living animals. If the color pattern has faded, they may still be identified by their size, larger than other dolphin species of similar appearance, and the relatively large number of teeth (43-50 per side in both upper and lower jaws). Only the spinner dolphin, much smaller in body length and having a much longer beak, has more teeth (46-65 per side in each jaw).

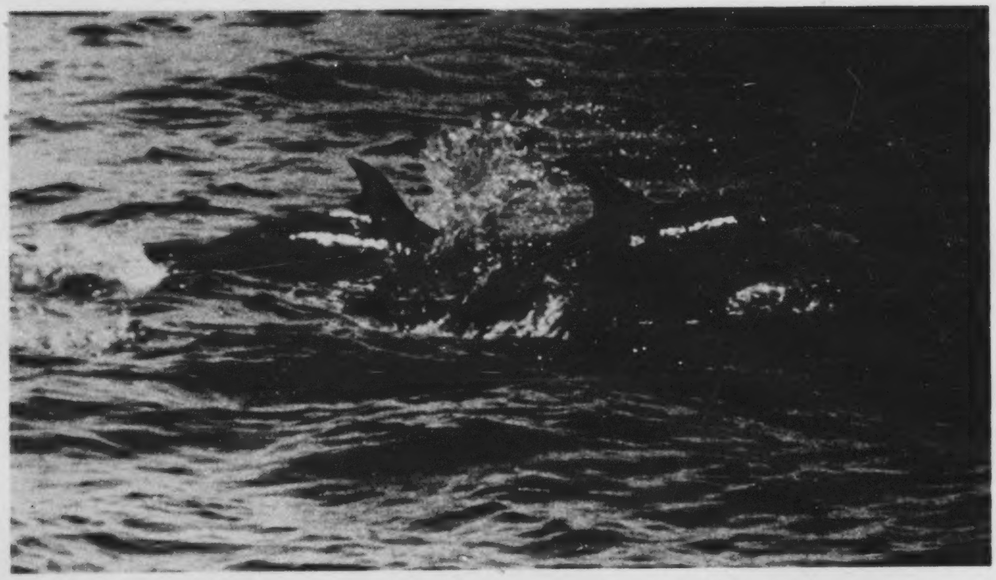


Figure 127.—Despite some similarities in appearance and behavior to saddleback dolphins, striped dolphins can be readily identified by the prominent dark stripes on the side of the body. These striped dolphins were photographed between the Caribbean Islands of Curaçao and Bonaire in 1972. (*Photo by D. Poppe.*)

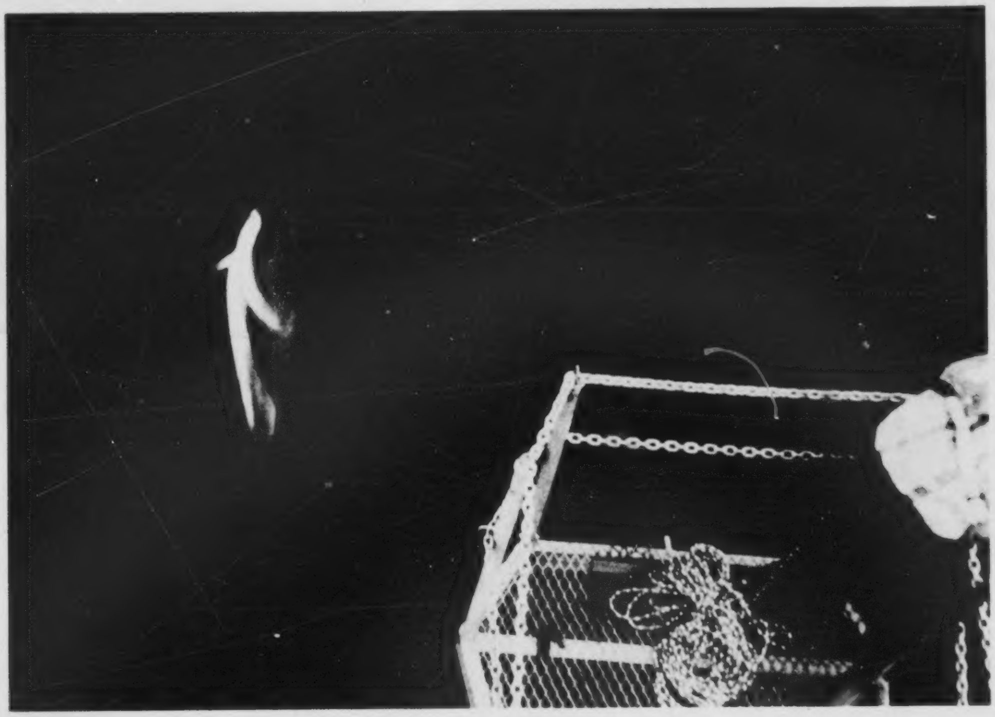


Figure 128.—When they ride the bow, the most apparent characteristic of striped dolphins is usually the dark streak beginning in the black coloration behind the dorsal fin and extending forward towards but not reaching the head. This stripe is not always present, however, and the species may sometimes appear uniformly pale gray from a distance. (*Photo from the tropical Atlantic by H. E. Winn.*)

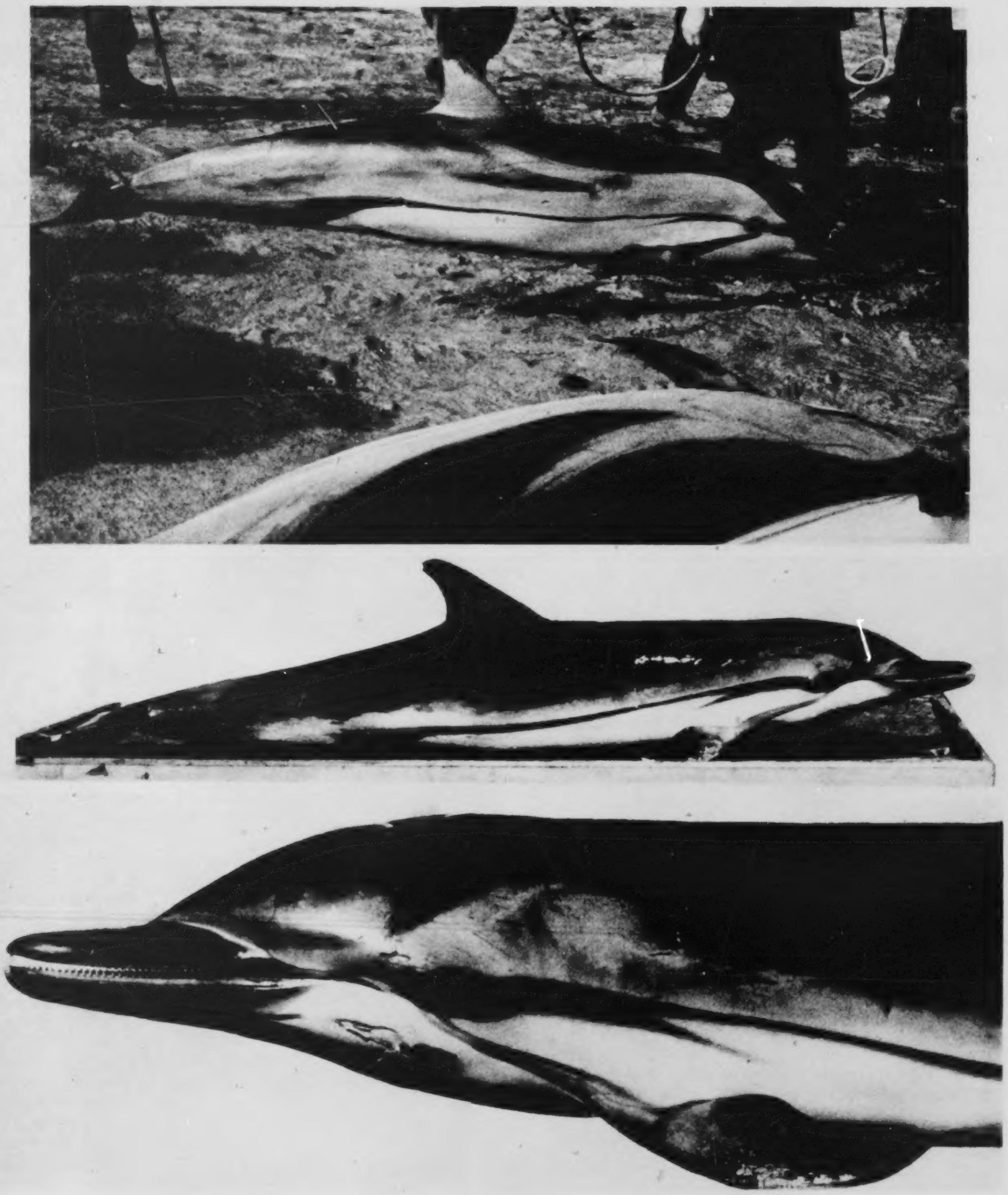


Figure 129.—Stranded striped dolphins. Note the distinctive black stripes 1) eye to flipper, 2) eye to anus, and 3) (on top animal) from black behind dorsal fin forward towards but not reaching the head. Some workers contend that striped dolphins are separable into two species, depending on whether the eye-to-flipper stripe has one (*Stenella coeruleoalba*) or two (*S. styx*) components. Others contend that the two belong to the same species (*S. coeruleoalba*). Striped dolphins have from 43 to 50 teeth in each upper and lower jaw. (*Photos from Japan by W. E. Schevill* [top] *and from Indian Rocks Beach, Fla. by W. A. Huck, courtesy of Marineland of Florida* [bottom].)

SADDLEBACK DOLPHIN (T)

Delphinus delphis Linnaeus 1758

Other Common Names

Saddleback porpoise, common dolphin, crisscross dolphin.

Description

Saddleback dolphins reach a maximum overall length of about 8.5 feet (2.6 m) though most individuals are less than 7.5 feet (2.3 m) long. Males are slightly larger than females of the same age.

The body shape varies slightly but usually closely resembles that of the striped dolphin (p. 113). The dorsal fin varies from nearly triangular to distinctly falcate and is pointed on the tip. It is sometimes all black and sometimes black on the borders with a lighter grayish region of varying size near the middle.

The back is basically black or brownish black, but this coloration and the extent of the striping patterns that form the impression of a saddle and the degree of color distinction between the different zones are highly variable.

The chest and belly are cream white to white and are the most distinctive features from a distance. Up close, the sides will be seen to be distinctly marked with an hourglass or crisscross pattern of tan or yellowish tan. This crisscross pattern is diagnostic for the species.

The rostrum is intermediate in length and shape between that of the spinner and that of the striped dolphin and is often black with a white tip.

Natural History Notes

Saddleback dolphins are often seen in herds of a thousand or more and are often very active, many animals leaping clear of the water at any time. Like spinner dolphins, saddleback dolphins are active bow-riders and often come to the boat from considerable distances. Once on the bow they often ride for extended periods of time.

Saddleback dolphins feed on squid and on a variety of fishes, including anchovies, myctophids, and hake.

May Be Confused With

Saddleback dolphins might easily be confused with striped dolphins and must be examined closely to be distinguished from them. Primary differences apparent in encounters at sea are as follows:

	Saddleback Dolphin	**Striped Dolphin**
COLORATION	Back basically black or brownish; distinct white chest or belly patch; hourglass or crisscross pattern on sides, some tan to yellowish tan; distinct black stripe from flipper to middle of lower jaw.	Back from light gray to dark gray to bluish gray; sides gray; belly gray or white; distinctive black lateral striping from 1) eye to flipper, 2) eye to anus, and 3) dark color behind dorsal fin forward, towards but not reaching head.
LENGTH	To 7.5 feet, rarely to 8.5 feet (2.3-2.6 m).	To 9 feet (2.7 m).

From a distance, saddleback dolphins might also be confused with spinner dolphins because of the habits of both species of congregating in large schools with much jumping and splashing. Both species ride the bow wave, and close examination should permit positive identification using the following characteristics:

	Saddleback Dolphin	**Spinner Dolphin**
COLORATION	Dark gray to brownish gray on back; white on belly with crisscross or hourglass pattern of tan to yellowish tan on side; distinct black stripe from flipper to middle of lower jaw.	Dark gray on back; tan or yellowish tan on sides; white on belly; lacks crisscross pattern on sides; distinct black stripe from flipper to eye.

Distribution

Saddleback dolphins are widely distributed in the temperate, subtropical, and tropical waters of the western North Atlantic Ocean. They have been reported off Newfoundland, Iceland, Nova Scotia, and the coast of Massachusetts, south along the coast of North America to the Caribbean (West Indies and Jamaica), in the Gulf of Mexico, and from South American waters at least to Margarita Island, Venezuela.

The species' occurrence in the more northerly portions of this range during the summer and early fall months appears to coincide with the intrusion of warm waters into those areas. They are not uncommon off Nova Scotia in summer and fall and are casual members of the marine mammalian fauna of the remaining Maritime Provinces during that period.

In previous years, saddleback dolphins were not uncommonly encountered by collectors of Marineland of Florida working the northeast coast of Florida, but the species has been conspicuously absent since about 1960. Reasons for this apparent shift of range are unknown.

Stranded Specimens

Saddleback dolphins have from 40 to 50 small, sharply pointed teeth in each side of both the upper and lower jaws. These numbers overlap with only those of the striped and spinner dolphins (with 43-50 and 46-65, respectively). Saddleback dolphins should be readily distinguishable from both these species by the features outlined under the descriptions of living animals and distinguishable from the bridled dolphins by the distinctive markings on the head of the two species (see Figs. 121 and 134).

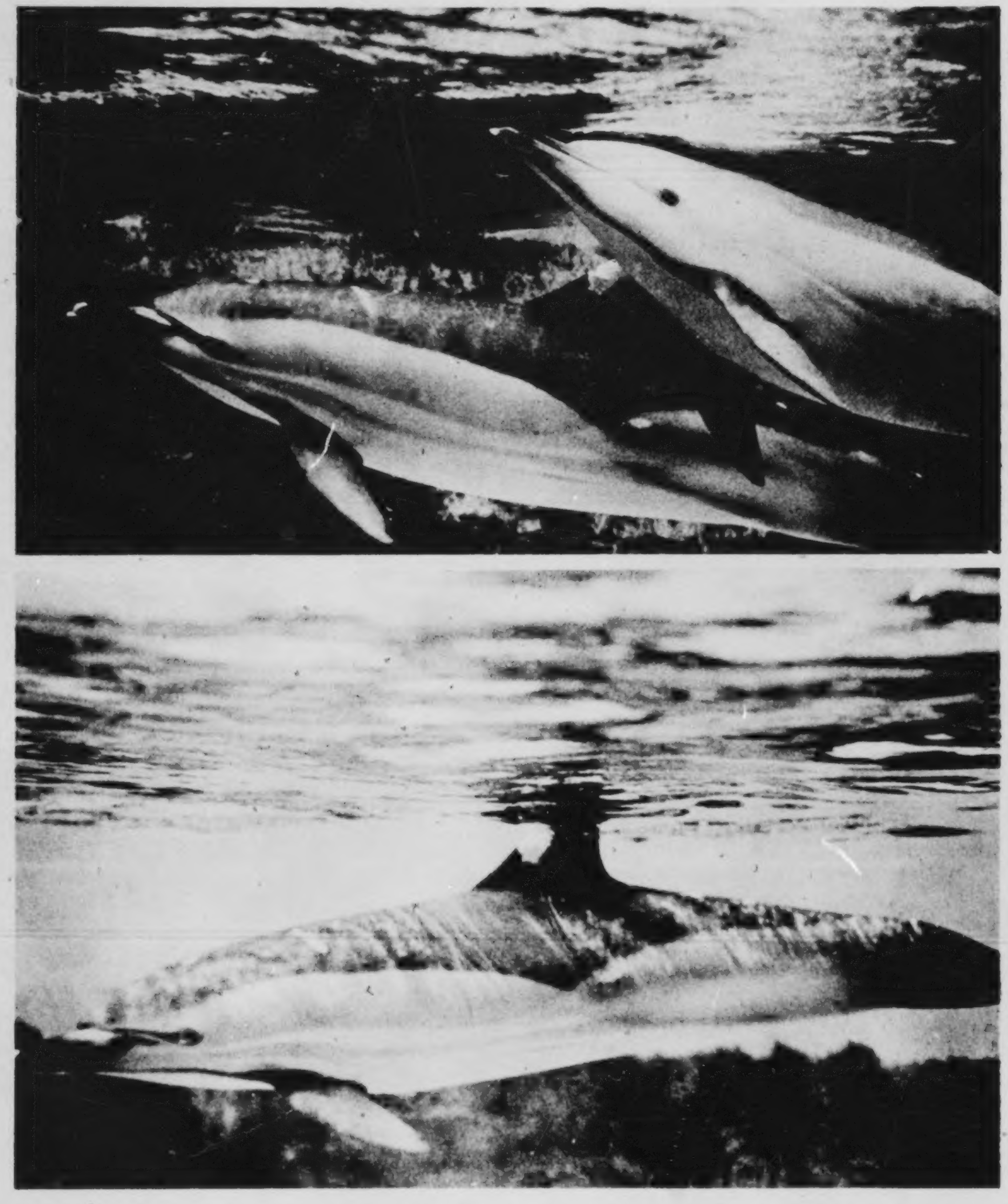


Figure 130. – Saddleback dolphins captured off St. Augustine, Fla., shown in the tank at Marineland of Florida. The highly distinctive crisscross or hourglass pattern of tan or yellowish tan on the sides is clearly visible. Note also the light tip of the snout and the dark line from the center of the lower jaw to the flipper. This last characteristic readily distinguishes the saddleback dolphin from the striped dolphin, in which the black stripe begins at the corner of the mouth rather than near the center of the lower jaw. (*Photos courtesy of Marineland of Florida.*)

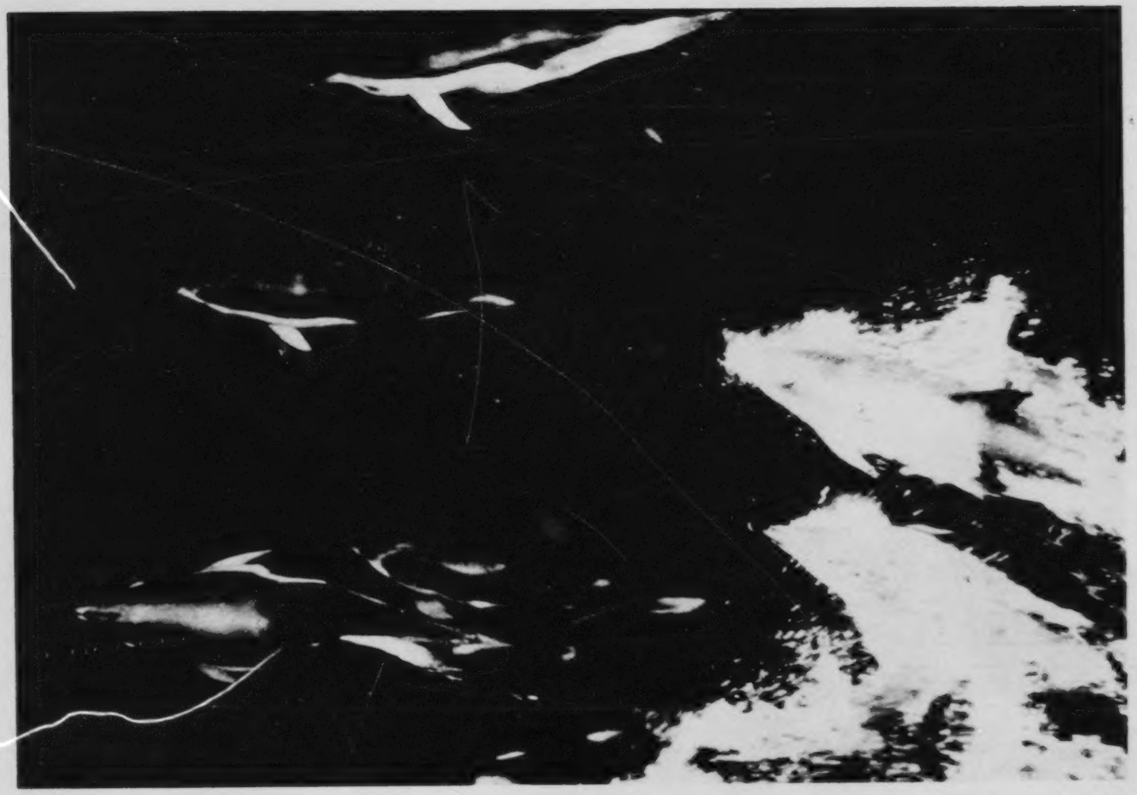


Figure 131. — Saddleback dolphins on the bow of a ship off Massachusetts in 1966. The color pattern, including the dark brownish-gray back, the crisscross pattern on the sides, and the white belly, are clearly visible. The light tip of the snout helps distinguish this species from the spinner dolphins, which have a black-tipped snout. (*Photo by E. Wheeler.*)

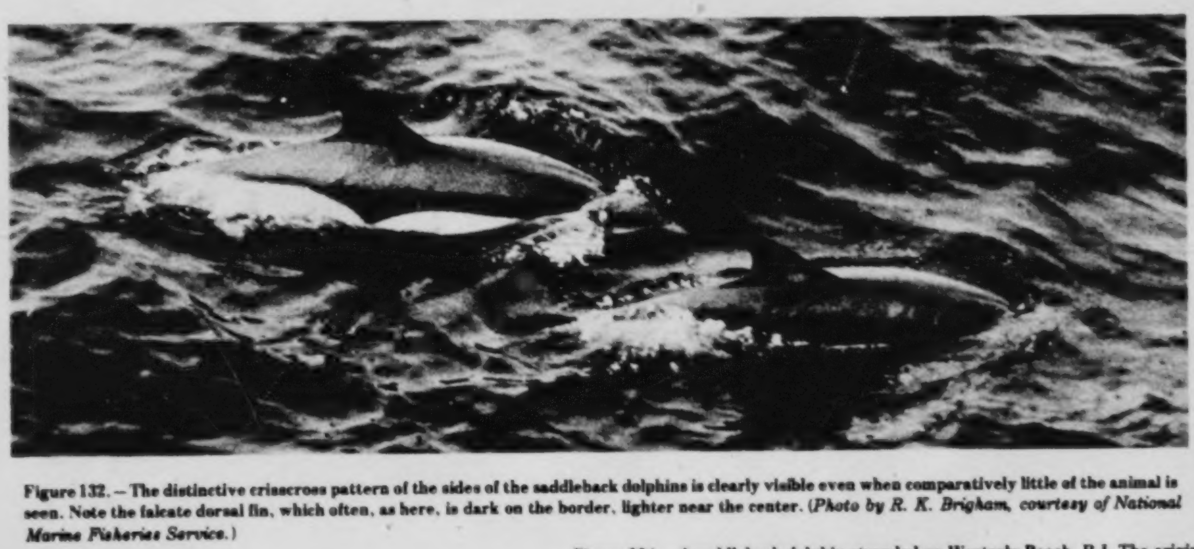


Figure 132. — The distinctive crisscross pattern of the sides of the saddleback dolphins is clearly visible even when comparatively little of the animal is seen. Note the falcate dorsal fin, which often, as here, is dark on the border, lighter near the center. (*Photo by R. K. Brigham, courtesy of National Marine Fisheries Service.*)

Figure 134. — A saddleback dolphin stranded on Westerly Beach, R.I. The origin of the common name "crisscross dolphin" is evident in the color pattern of the side. Note also the distinctive black stripe from the center of the lower jaw to the origin of the flipper. (*Photo courtesy of H. E. Winn.*)

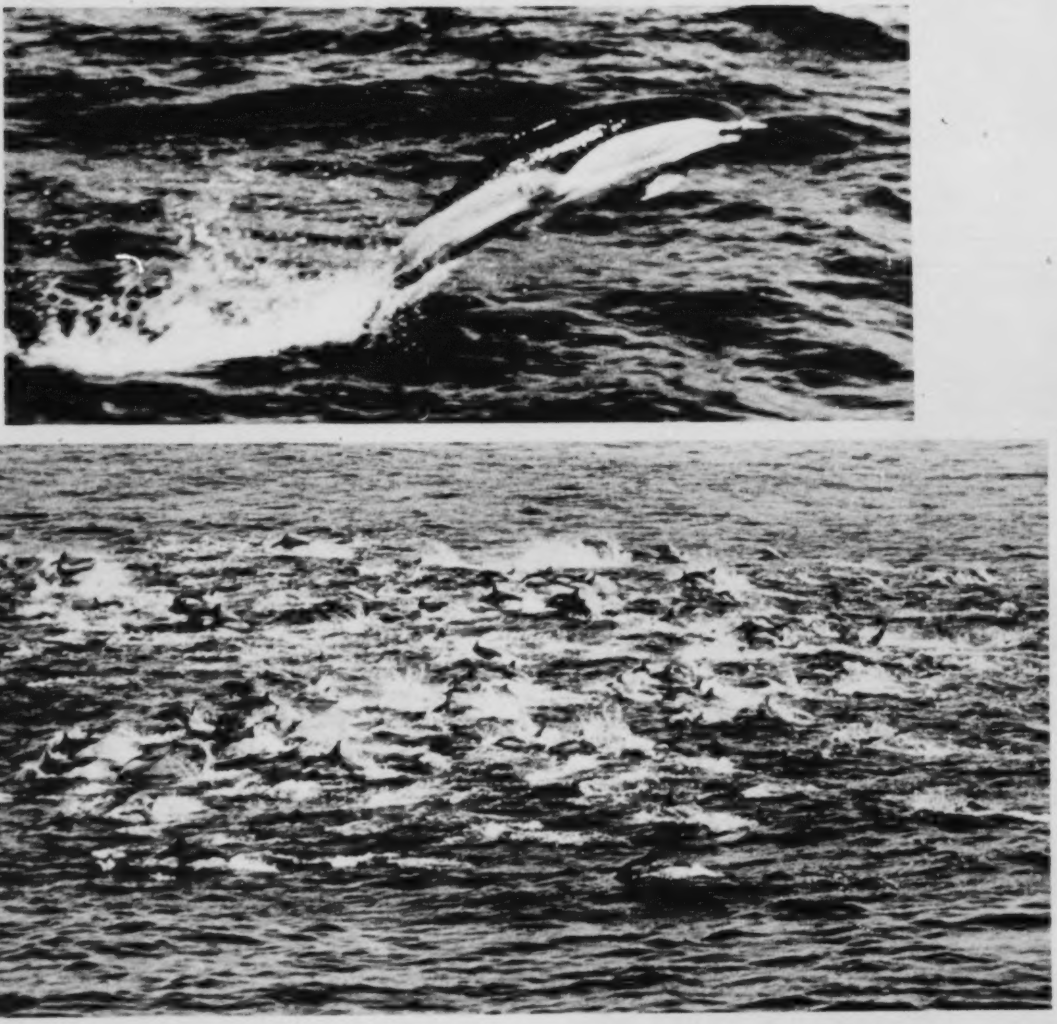
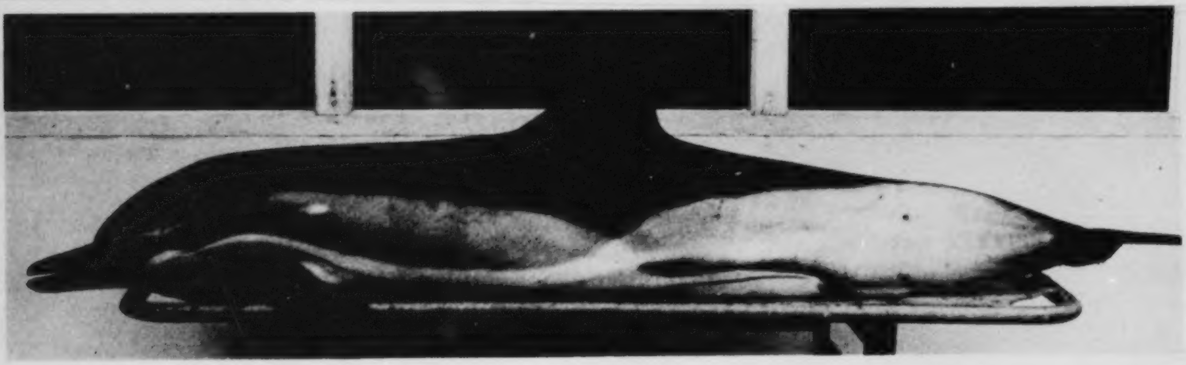


Figure 133. – Saddleback dolphins frequently jump clear of the water and may reenter in a variety of ways: 1) smoothly, head first; 2) with a chin slap; 3) with an accompanying tail lob; or 4) on the sides or back with a splash. This habit enables them to be spotted from a considerable distance. When stressed, herds bunch tightly together, like the group in the bottom photo. (*Photos from off Virginia by J. G. Mead [top] and off San Diego, Calif. by S. Leatherwood [bottom].*)



FRASER'S DOLPHIN (T)

Lagenodelphis hosei Fraser 1956

Other Common Names

Sarawak dolphin, Bornean dolphin, Fraser's porpoise.

Description

Fraser's dolphins reach an overall length of at least 8 feet (2.4 m). They are extremely short-beaked and have a pronounced dark stripe, similar to that found on the striped dolphin, extending from the rostrum to the area of the anus. They are robust in build and have rather small flippers and dorsal fin relative to body size. The dorsal fin is slender, falcate, and pointed on the tip. The body is gray on the back and white on the belly. The color of the side is dominated by the striping pattern. A cream-white band beginning high on the rostrum extends above and past the eye, continues towards the tail, and finally dissipates in the body color above the anus. Just below and parallel to this cream-white band is a black one extending from the area of the eye to the anus. A second cream-white band below and parallel to this dark strip separates the darker gray coloration of the side from the white coloration of the belly. The flippers are dark above and below.

Natural History Notes

The little that is known of the natural history and behavior of the species may be summarized as follows: Fraser's dolphins occur in groups of up to at least 500 animals and in the Pacific are occasionally seen with spotted dolphins (*Stenella attenuata*). From all accounts, they are not uncommon in certain areas of the tropical Pacific and off South Africa.

Fraser's dolphins appear to be deep divers. They are aggressive swimmers and, when they surface to breathe, often charge to the surface, creating a spray from their heads. They have also been reported leaping clear of the water.

May Be Confused With

Fraser's dolphin is intermediate in form between *Lagenorhynchus* and *Delphinus delphis* (thus the composite name *Lagenodelphis*). Because the species is apparently limited to tropical waters, however, and because of the prominent stripe on the side of the body, Fraser's dolphins are more likely to be confused with the striped dolphins (p. 113). The two species can be distinguished at sea by several characteristics:

Fraser's Dolphin	**Striped Dolphin**
COLORATION	
Single broad black stripe from beak and eye back to area of anus.	Color dominated by series of stripes from: 1) eye to anus; 2) eye to flipper, and 3) black behind dorsal fin forward, towards but not reaching the head.
BEAK	
Extremely short and indistinct.	Longer, much more distinctive.
BODY SHAPE	
Robust, particularly in front of dorsal fin.	Slenderer.
FLIPPERS	
Small, dark in color, and originating in light color of sides.	Longer, sometimes lighter on upper surface; note stripe from front of flippers to eye.
DORSAL FIN	
Small, slender, slightly falcate, and pointed on top.	Taller dorsal fin, broader at base.

Distribution

Although Fraser's dolphins have yet to be described for the western North Atlantic Ocean, they are included here as "possibles" because of the recent discovery that their range is far more extensive than previously known. Records to date have been limited to offshore tropical waters.

The species was first described in 1956 from the remains of a beach-washed specimen from Sarawak in the South China Sea. Since that time specimens have been collected from the eastern tropical Pacific, and others have stranded in such widely divergent localities as Australia, South Africa, and Japan. Recent summaries have added sighting records from the Central Pacific, near the Phoenix Island, from northwest of the Galapagos Islands, and from South African waters.

Stranded Specimens

Stranded Fraser's dolphins should be readily identifiable by 1) distinctive coloration of the body; 2) short, indistinctive beak; and 3) robust form. The only other species of small dolphins with beaks of similar length and general appearance are the Atlantic white-sided and white-beaked dolphins (p. 123 and 126); these dolphins, both with far more northerly ranges, have 30-40 and 22-28 teeth in each side of each jaw, respectively, while Fraser's dolphins have from 40 to 44 teeth in the upper jaw and from 39 to 44 in the lower jaw.

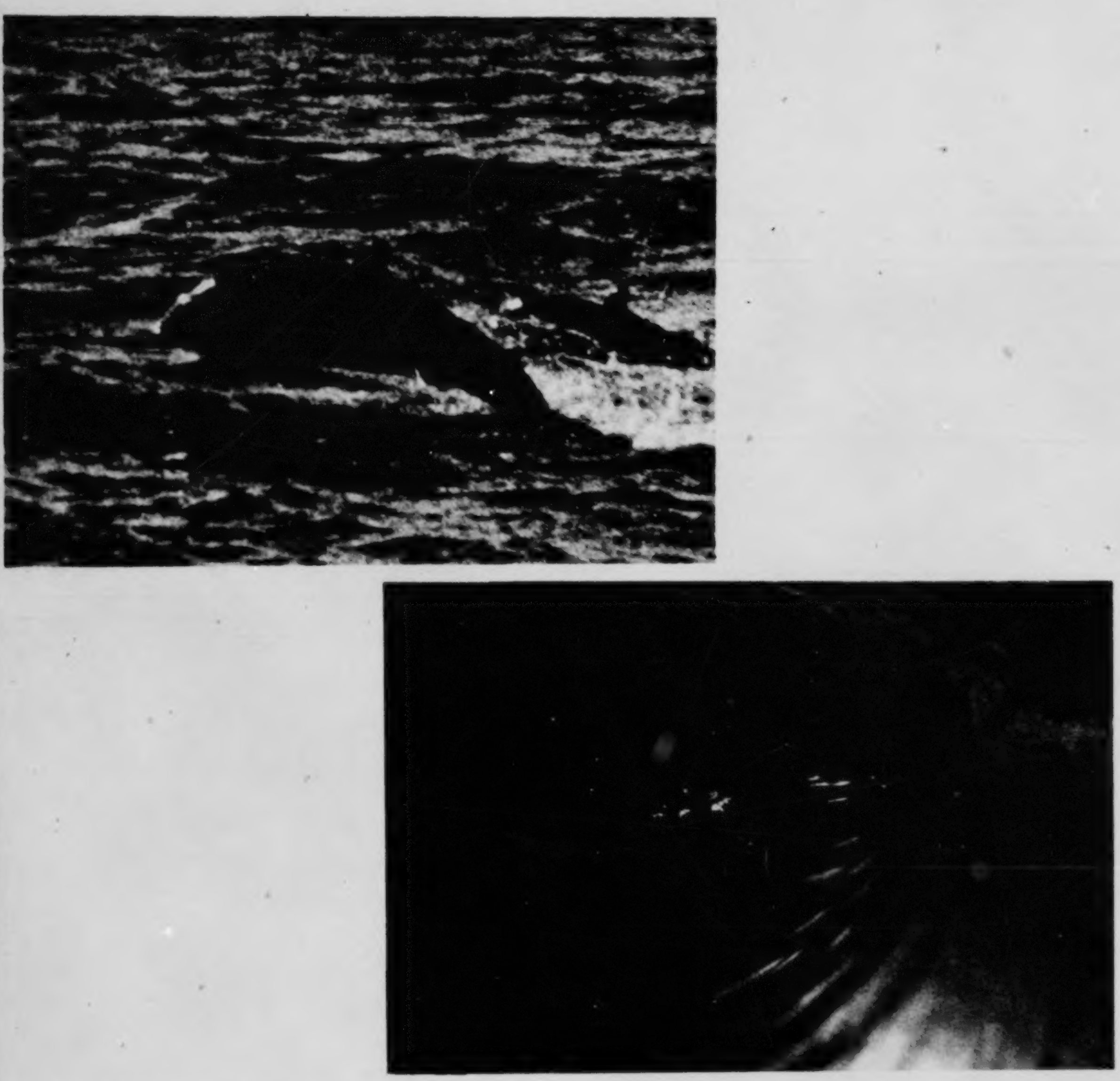
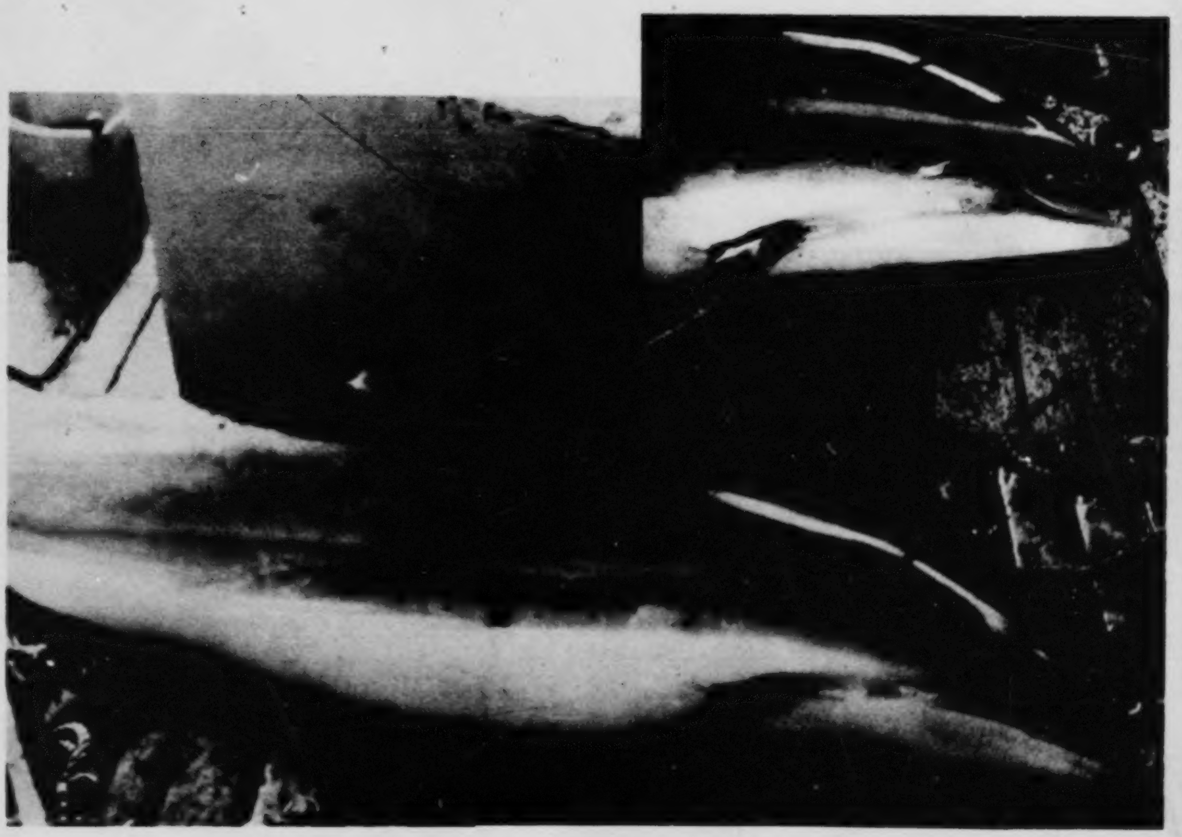
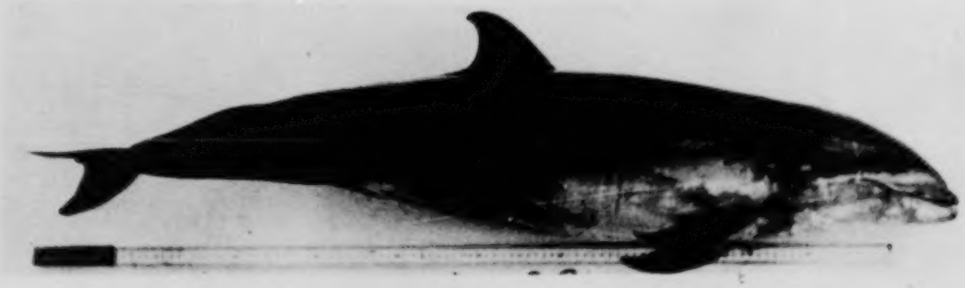


Figure 135. — **Fraser's dolphins, like these photographed off the Phoenix Islands in the Pacific (top) and this one off the Philippines (bottom), are definitely identifiable in their tropical range by the short snout, the dark flank stripe and the small dorsal fin and flippers. They may reach 8 feet (2.4 m), or more, in length and occur in herds of at least 500 animals, sometimes with spinner dolphins or Atlantic spotted dolphins.** ***(Photos by K. C. Balcomb [top] and T. Hammond [bottom].)***

(following page) ▶

Figure 136. — **Fraser's dolphins from the eastern tropical Pacific: adult (top and inset) and calf (bottom). Note the distinctive black lateral strip and the extremely small flippers and dorsal fin.** ***(Photos by R. Garvie [top and inset] and S. Leatherwood [bottom].)***





ATLANTIC WHITE-SIDED DOLPHIN (T)

Lagenorhynchus acutus (Gray 1828)

Other Common Names

Atlantic white-sided porpoise, jumper (Newfoundland).

Description

Atlantic white-sided dolphins reach about 9 feet (2.7 m) in maximum length and are robust in form with a small but distinct beak (less than 2 inches [5.1 cm] long).

The dorsal fin is tall, distinctly back curved, and pointed on the tip. The tail stock is extremely thick and does not narrow laterally until very near the tail flukes.

The back is distinctly black, the belly white. The sides have zones of gray, tan, and white.

The single most distinctive feature of Atlantic white-sided dolphins is an elongated oval zone of white and yellowish white along the sides from just below the dorsal fin to the area above the anus. These patches of lighter coloration, clearly demarcated from each other and from the surrounding coloration, are frequently visible simultaneously with the dorsal fin as the animals roll at the surface to breathe. Even alone this feature permits positive identification of the species. The dorsal fin is often part gray, part black. The beak is all black.

Natural History Notes

Atlantic white-sided dolphins are known to congregate in herds of perhaps a thousand animals, though smaller herds are far more common. The species is often wary of ships and does not ordinarily ride the bow wave. Like a number of other species, white-sided dolphins have been reported in association with Atlantic pilot whales.

May Be Confused With

At sea, Atlantic white-sided dolphins are most likely to be confused with the white-beaked dolphins, with which they overlap in distribution. Though they are very similar in general appearance, the two can be distinguished in the following ways:

Atlantic White-Sided Dolphin	**White-Beaked Dolphin**
COLORATION	
Elongated band of yellowish white and white along side, visible behind and below dorsal fin as animal rolls.	Two grayish areas—one in front, the other below and behind dorsal fin, visible as animal rolls.
BEAK	
All black.	Sometimes white in parts of range though western Atlantic animals are usually dark.
MAXIMUM SIZE	
To 9 feet (2.7 m).	To 10 feet (3.1 m).
DORSAL FIN	
Often part black, part lighter gray.	Uniformly dark.

Distribution

Atlantic white-sided dolphins are distributed, primarily offshore, in the cool waters between the Gulf Stream and the Labrador Current. They have been observed from Hudson Canyon, off New York City, north to southern Greenland and perhaps Davis Straits. Their normal range shares a southern boundary with the white-beaked dolphin but does not extend as far to the north.

Stranded Specimens

In addition to the features described above for living animals at sea, stranded Atlantic white-sided dolphins can be distinguished from white-beaked dolphins by the following:

Atlantic White-Sided Dolphin	**White-Beaked Dolphin**
NUMBER OF TEETH	
30-40 per side per jaw, sometimes more in upper.	22-28 per side per jaw; have larger individual teeth—to 6 mm in diameter.
FLIPPERS	
Lower portion of forward margin more curved.	Lower portion of forward margin less acutely curved.
VENTRAL COLOR	
White coloration of belly extends high onto sides of body.	White coloration of belly extends to lower jaw but not above flippers on sides.
CAUDAL CRESTS	
Tail stock strongly compressed laterally; taller, narrows rapidly just in front of flukes.	Tail stock less laterally compressed, tapers more gently towards tail flukes.

Figure 138.—An Atlantic white-sided dolphin off the eastern Canadian coast. These animals do not usually ride the bow wave, but when they can be examined at close range, they can be readily distinguished from their more northerly cousins, the white-beaked dolphins, by their highly distinctive color pattern. (*Photo by P. B. Beamish.*)

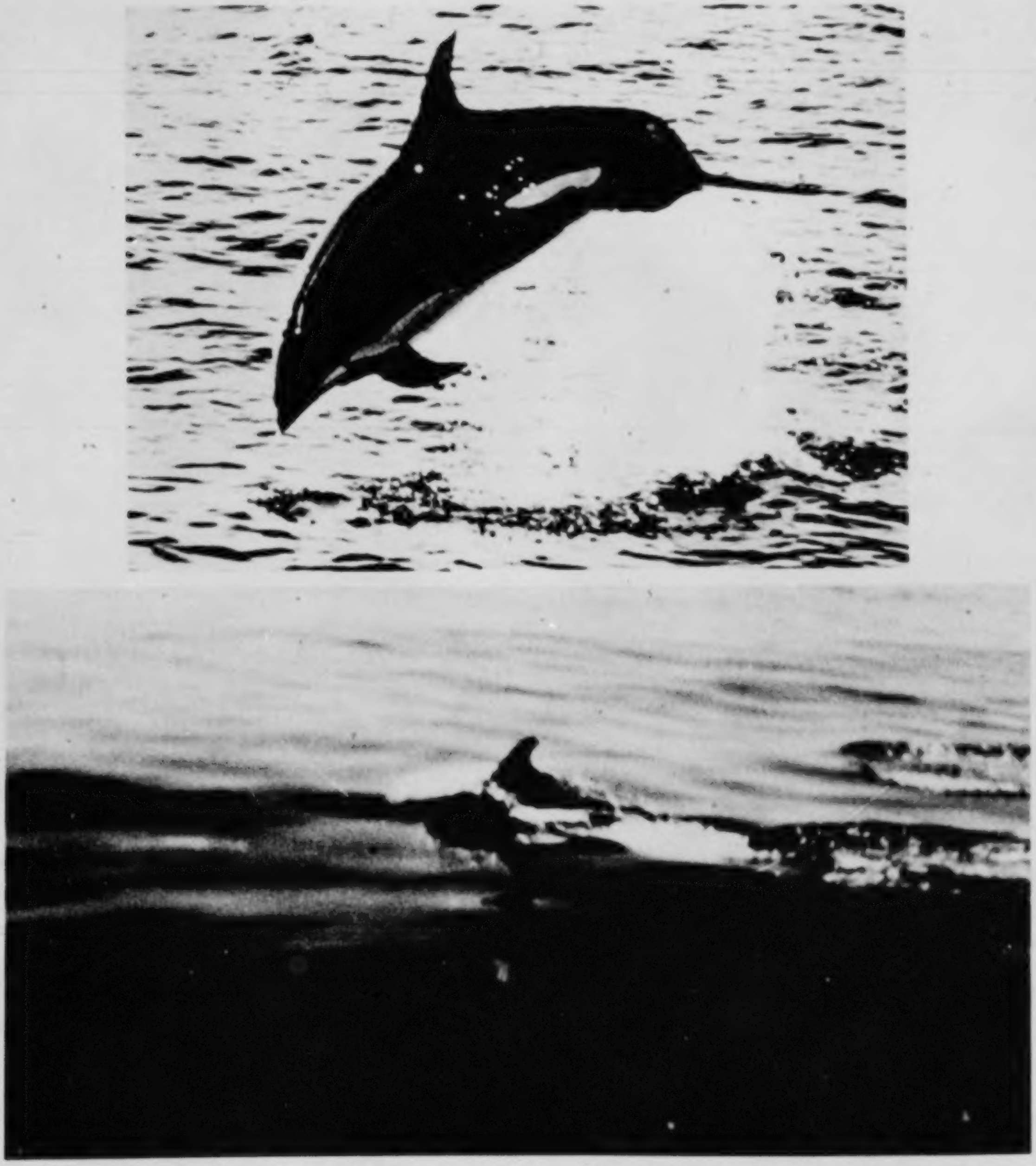
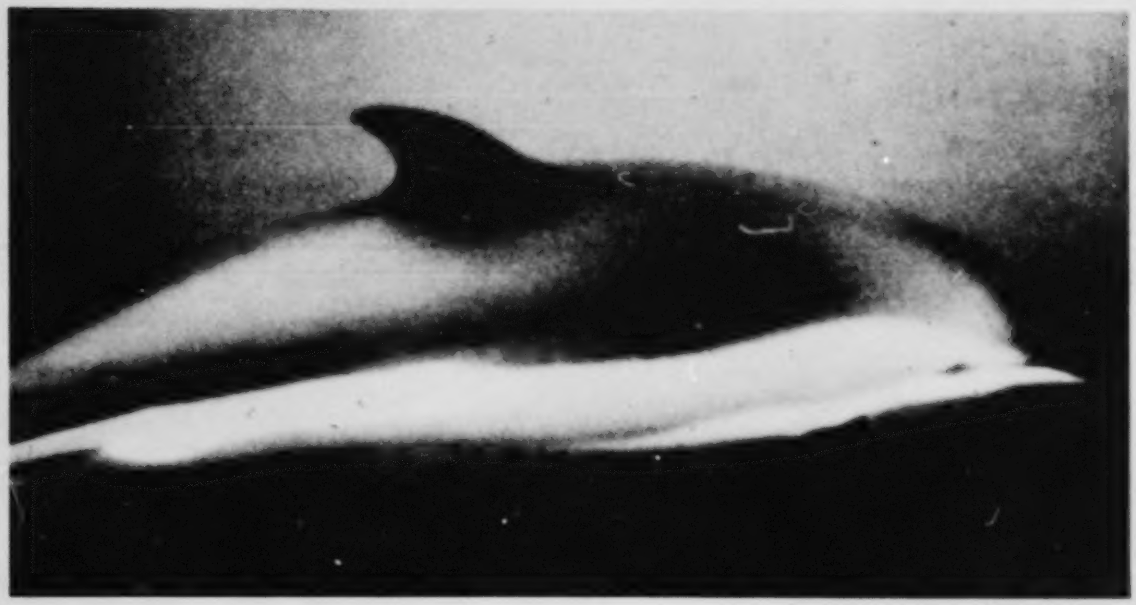


Figure 137.—Atlantic white-sided dolphins at sea between Cape Cod, Mass. and Nova Scotia. This species can be positively identified by the elongated zone of white and the adjacent region of tan or yellowish tan below and behind the dorsal fin, visible even in the fast-swimming animal in the bottom picture. The top photo illustrates the origin of the Newfoundland common name "jumper." (*Photos by K. C. Balcomb* [*top*] *and H. E. Winn* [*bottom*].)



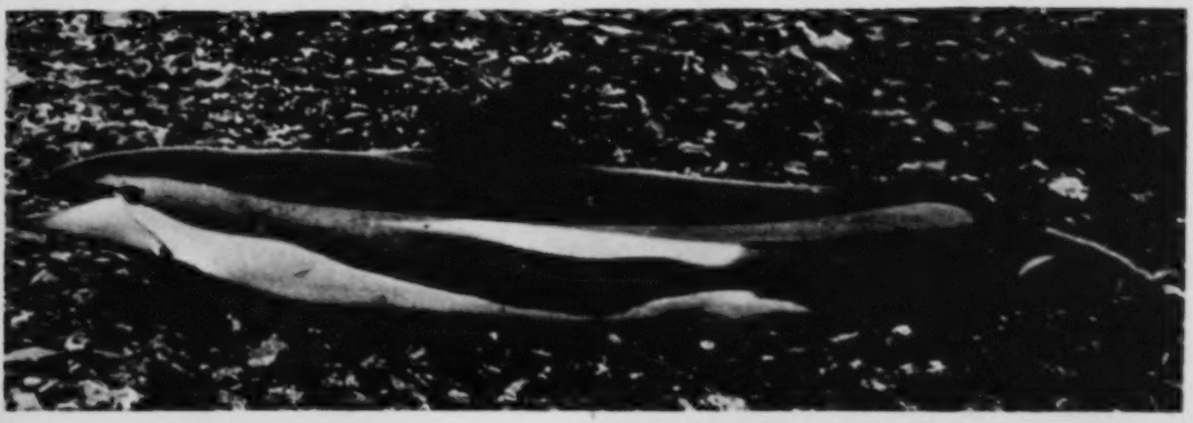


Figure 139.—The highly distinctive pattern of the Atlantic white-sided dolphins is clearly visible in this animal stranded in Scotland. Even if the color pattern has faded, however, this species should be easy to identify. The 30-40 teeth in each of the upper and lower jaws permit distinction from the white-beaked dolphins, which have only about 22-28 per side in each jaw. (*Photos by B. Tulloch, courtesy of A. S. Clarke.*)

WHITE-BEAKED DOLPHIN (T)

Lagenorhynchus albirostris Gray 1846

Other Common Names

White-beaked porpoise, squidhound (Newfoundland).

Description

White-beaked dolphins reach a maximum overall length of about 10 feet (3.1 m). The body is robust in form with a tall, uniformly dark-gray dorsal fin, and a short but distinct beak which, as the common name implies, is often light gray to white above and below, at least in European waters. The beak of animals in the western Atlantic populations is less frequently white. The back and sides are basically dark gray to black, and the belly is white to light gray.

Swimming white-beaked dolphins can be most readily identified by the two areas of pale coloration on the sides, one in front of and another below and behind the dorsal fin. These areas are clearly visible from a ship or aircraft as the animals roll at the surface.

Natural History Notes

White-beaked dolphins may sometimes occur in herds of up to 1,500 individuals. Like their cousins, the Atlantic white-sided dolphins, they do not commonly ride the bow waves of vessels.

White-beaked dolphins feed on squid, octopus, cod, herring, capelin, and sometimes on benthic crustaceans.

May Be Confused With

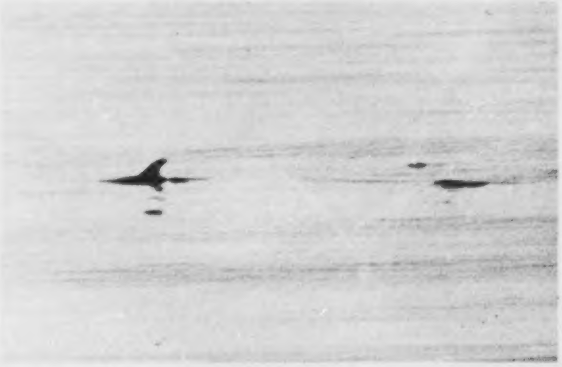
In their northerly range white-beaked dolphins are likely to be confused with only the Atlantic white-sided dolphins. The most distinctive features of white-beaked dolphins are 1) the two areas of paleness described above, 2) the prominent, dark-gray dorsal fin, and sometimes 3) the white beak. Other features by which the two species may be distinguished in the brief encounters typical at sea are tabularized on p. 127.

Distribution

White-beaked dolphins are the more northerly of the two species of *Lagenorhynchus* in the western North Atlantic. They are found from Cape Cod, Mass., north to western and southern Greenland and Davis Straits, though they are apparently far more numerous to the north of this range. They appear in Davis Straits in spring and summer and leave that area in autumn, sometimes as late as November, to move southward. They winter as far south as Cape Cod, where they are the common dolphin species in April, May, and June (sometimes to July). Their migrations are poorly known.

Stranded Specimens

Stranded white-beaked dolphins can be most readily distinguished from white-sided dolphins by the substantial



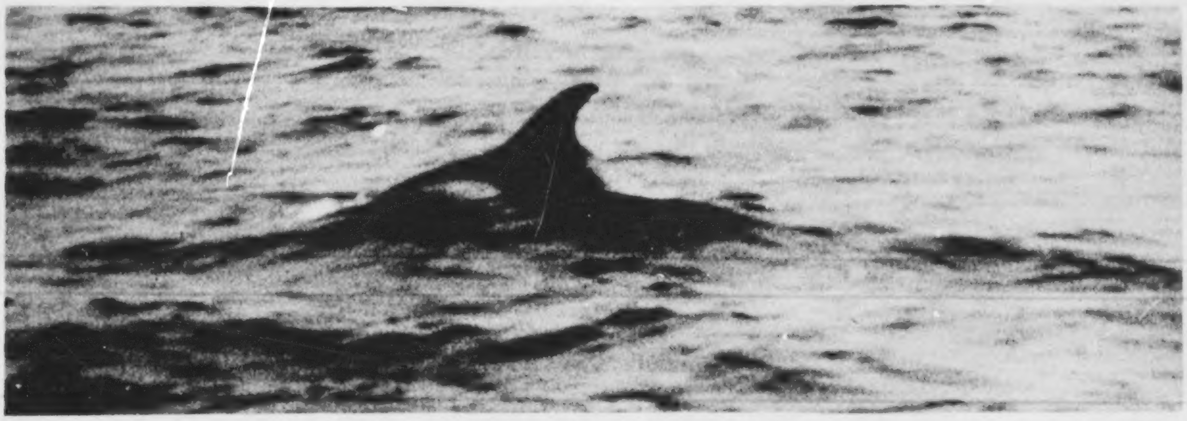


Figure 140.—Two views of white-beaked dolphins off Newfoundland. This species is characterized by a prominent uniform dark gray dorsal fin and two areas of paleness on the sides, one in front of and one below and behind the dorsal fin. White-beaked dolphins are distributed from Newfoundland north, extending to more northerly waters than Atlantic white-sided dolphins. (*Photos by H. E. Winn* [*bottom*] *and W. A. Watkins* [*top*].)

differences in coloration and the differences in numbers of teeth.

White-Beaked Dolphin	Atlantic White-Sided Dolphin
TEETH	
22-28 per side per jaw.	30-40 per side per jaw, sometimes more in upper jaw.
COLORATION	
Beak sometimes gray or white above and below; two pale areas visible on living animals not visible on stranded specimens.	Beak all black; side marked with elongated areas of white with streaking patterns of yellow and tan.

Additional characteristics by which the two species may be distinguished are summarized on p. 123.

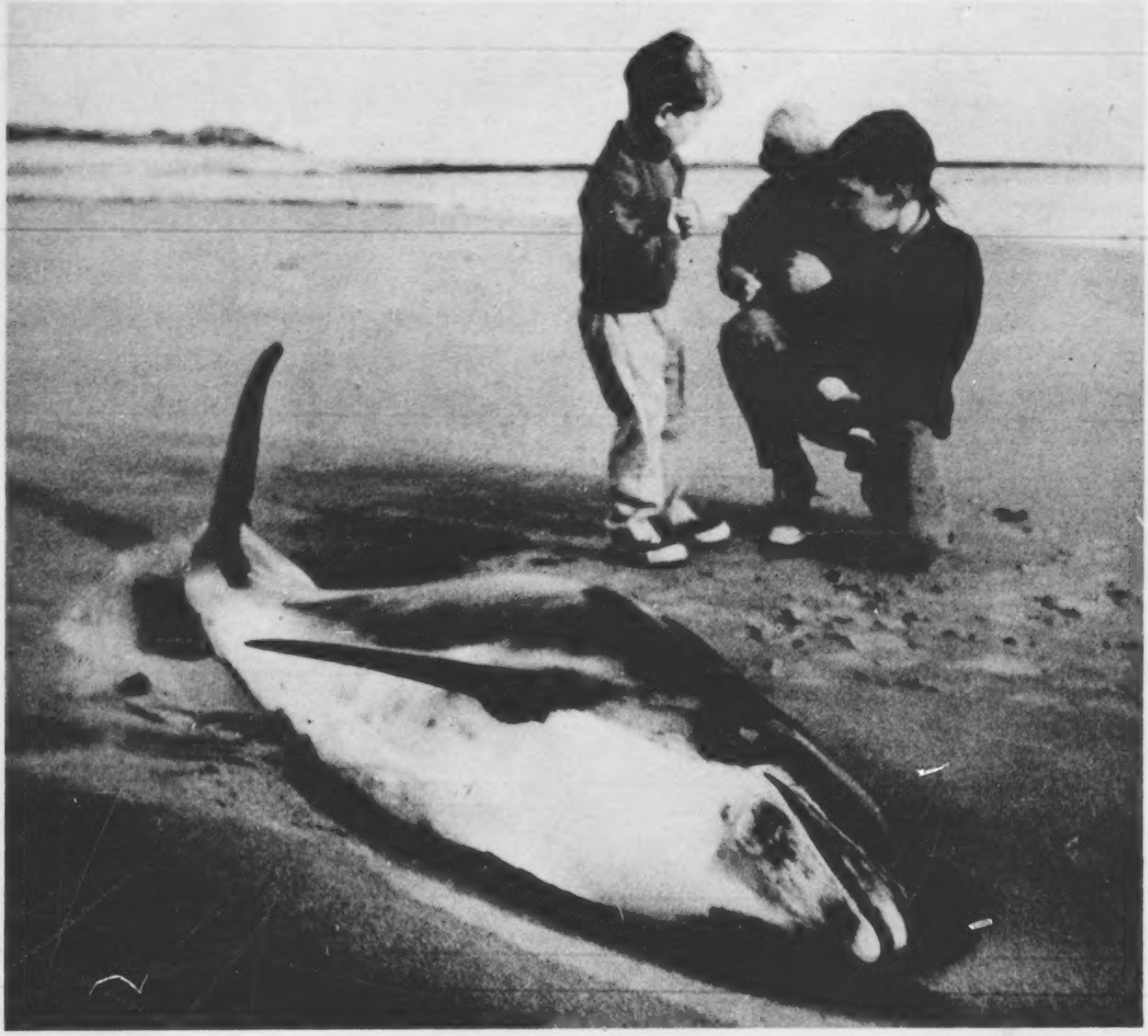


Figure 141.—White-beaked dolphins reach nearly 10 feet (3.1 m) in length. Stranded animals, such as this specimen from Scotland, should be distinguishable from Atlantic white-sided dolphins by their differences in coloration. This species sometimes has a white beak and always lacks the elongated white patch and tan or yellow streaking found on the side of Atlantic white-sided dolphins. (*Photos by A. S. Clarke.*)

ATLANTIC BOTTLENOSED DOLPHIN (T)

Tursiops truncatus (Montague 1821)

Other Common Names

Bottlenosed porpoise, gray porpoise, common porpoise.[12]

Description

Atlantic bottlenosed dolphins reach a maximum overall length of about 12 feet (3.7 m) and weigh in excess of 1,430 pounds (650 kg). They have relatively stubby snouts and dorsal fins, which are broad at the base, tall, and falcate. Coloration varies slightly, but individuals are usually dark gray on the back, lighter gray on the side, grading to white or pink on the belly. Old females may have spots on the belly. The dark coloration of the back often appears as a highly distinct cape, particularly on the head.

Natural History Notes

Atlantic bottlenosed dolphins often occur in groups of up to several hundred individuals which usually consist of aggregations of small groups of no more than a dozen animals each. They frequently associate with the Atlantic pilot whales and are frequently found accompanying the right and hump back whales travelling along the Atlantic coast of Florida.

Atlantic bottlenosed dolphins have catholic tastes, feeding on shrimp, eels, catfish, menhadden mullet, and miscellaneous trash fish, to mention only a few. They are frequently found near shrimp boats, feeding on fish stirred up by the trawls or on discarded trash fish.

They sometimes move in to ride the bow wave of a vessel, turning on their sides, sometimes spinning completely around on their longitudinal axis when doing so. Individuals may also turn their heads downward or to the side. They are often found close to shore, in bays and lagoons, and sometimes venture up the larger rivers. Some individuals, especially the larger animals, are found as far offshore as the edge of the continental shelf. Atlantic bottlenosed dolphins sometimes ride the surf. Individuals may jump clear of the water as high as 15-20 feet (4.6-6.1 m), a behavior on which aquarium shows have capitalized.

Members of this species are the dolphins most commonly maintained in captivity at zoos, aquariums, marine parks, and research institutions. For that reason, they are perhaps more familiar to the general public than any other species of porpoise, dolphin, or whale.

May Be Confused With

From at least Cape Hatteras southward, the range of the Atlantic bottlenosed dolphins distributed in inshore areas may overlap with that of Atlantic spotted dolphins, particularly during the spring and summer, when the Atlantic spotted dolphins move inshore. There the two species may be confused. The Atlantic bottlenosed dolphins and the Atlantic spotted dolphins can be distinguished, however, by the following characteristics:

Atlantic Bottlenosed Dolphin	**Atlantic Spotted Dolphin**
MAXIMUM SIZE	
8 feet to as much as 12 feet (2.4 to 3.7 m).	7.5-8 feet (2.3-2.4 m).
COLORATION	
Not spotted (old females may have spots on belly); dark gray on back; light gray on sides; white or pink on belly.	Dark purplish gray on back; lighter gray on sides and belly; body becomes increasingly spotted with age.
HEAD AND BEAK	
Head robust; beak relatively short.	Head more slender; beak longer.

Some Atlantic bottlenosed dolphins are distributed well offshore as far as the edge of the continental shelf. Those individuals may be confused with either rough-toothed dolphins (p. 135) or with grampus (p. 96). They may be distinguished from rough-toothed dolphins by the following:

Atlantic Bottlenosed Dolphin	**Rough-Toothed Dolphin**
BODY COLOR	
Dark gray on back; light gray on side; white or pink on belly.	Dark gray, almost purplish with yellow spots; lighter on belly.
SNOUT	
Relatively short and stubby, and clearly demarcated from forehead; usually all gray; some older individuals have white-tipped snouts and/or white lips.	Long and slender; not clearly demarcated from forehead; lower jaw and lips speckled white.

Distinguishing differences between the Atlantic bottlenosed dolphins in offshore areas and grampus are tabularized on p. 96.

In northeastern South America the range of the Atlantic bottlenosed dolphin apparently overlaps with that of the Guiana dolphin, which, except for size, it closely resembles (see p. 132).

Distribution

The Atlantic bottlenosed dolphins are widely distributed in the temperate and tropical waters of the western North

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[12] See also p. 150 for use of this common name for another species, the harbor porpoise.

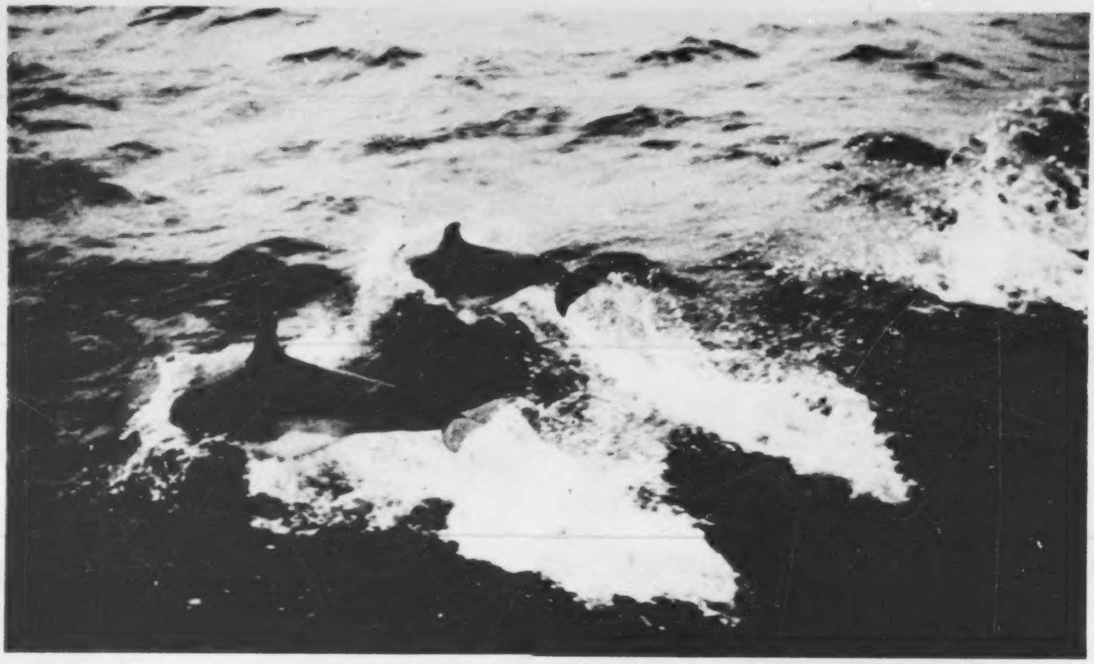

Figure 142. – Atlantic bottlenosed dolphins leaping on the bow of a research vessel between Cape Cod, Mass. and Nova Scotia. Note the robust body, the falcate dorsal fin, and the gradation of color in three zones – dark gray on the back, to lighter gray on the sides, to white or pink on the belly. (*Photo by A. Taruski.*)

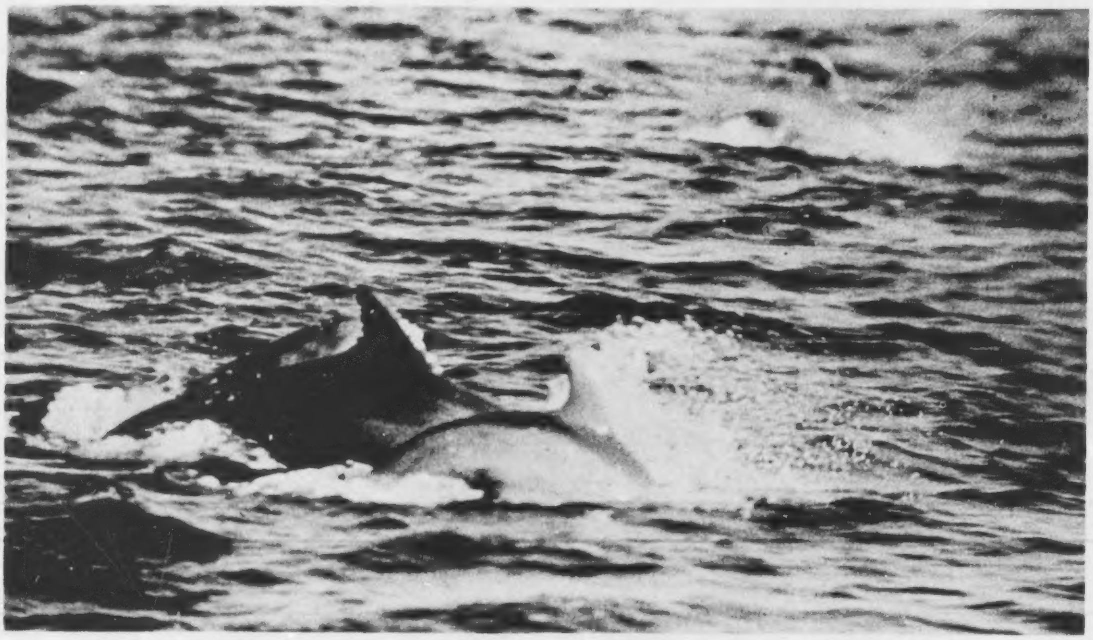

Figure 143. – A side view of the Atlantic bottlenosed dolphins off St. Augustine, Fla. Note the dark grayish coloration of the back, the lighter coloration of the side, and the tall, sharply angled dorsal fin, pointed on the tip. Though dorsal fin shapes are highly variable, dorsal fins of the Atlantic bottlenosed dolphin are usually more falcate and less pointed on the tip than on these animals. (*Photo courtesy of Marineland [illegible] Florida.*)

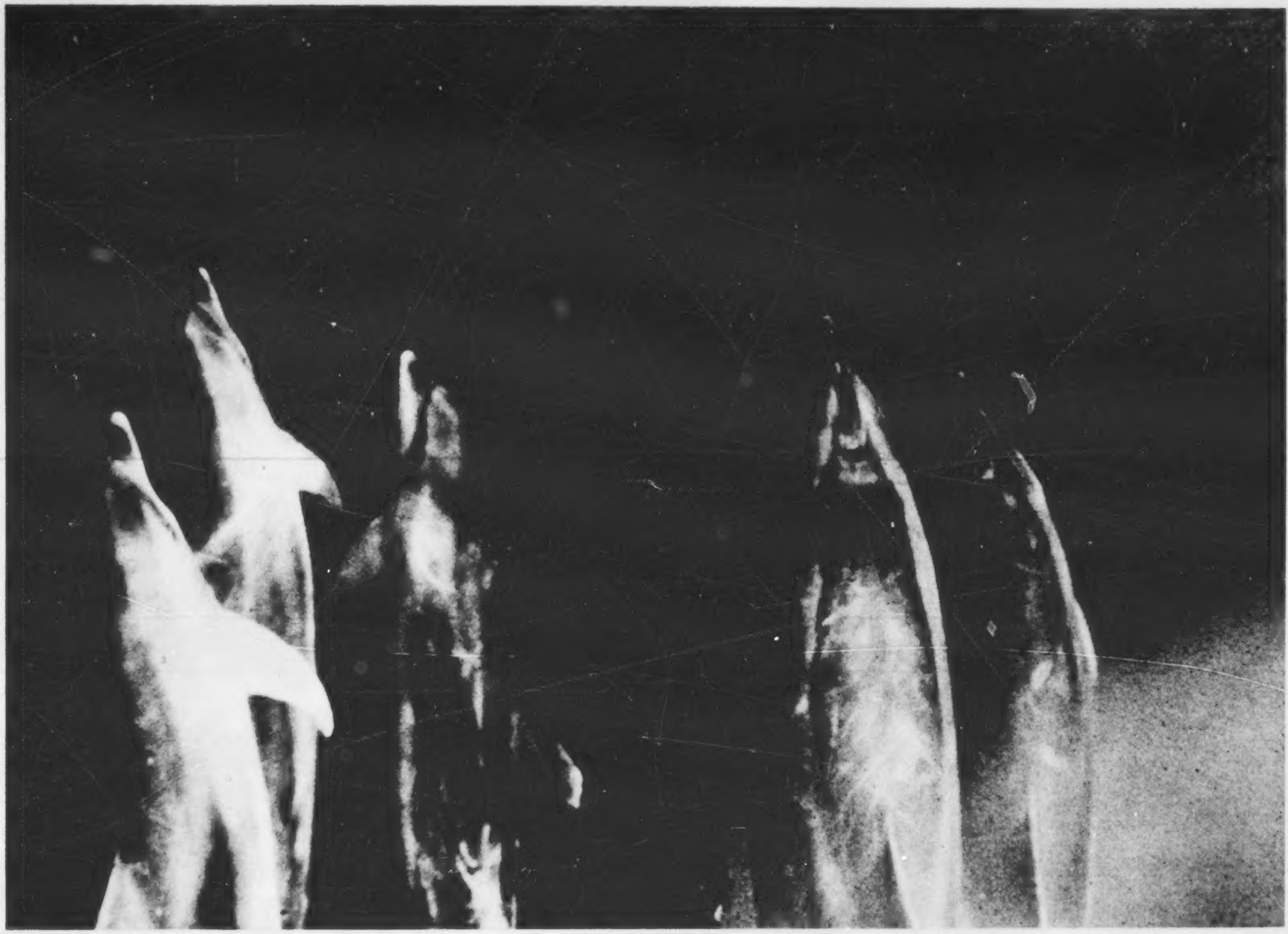

Figure 144. – Atlantic bottlenosed dolphins frequently ride the bow wave, often turning on their sides as they do so. Note the distinctive color zones, the characteristic shape of the head and beak, and the smooth lines of the flippers. (*Photo by L. Rigley.*)

Atlantic. They are known from at least Nova Scotia but are best known from New England southward to Florida, westward in the Gulf of Mexico, and thence throughout the West Indies and Caribbean to Venezuela.

In the northern portion of that range, Atlantic bottlenosed dolphins are distributed offshore. In the southern portions of their range from at least North Carolina southward, the majority are found nearshore and often enter bays and lagoons, and sometimes venture up the larger rivers. Daily migrations in these areas may follow tidal flow.

In these same southerly areas some Atlantic bottlenosed dolphins are distributed as far offshore as the edge of the continental shelf.

Stranded Specimens

Within their range, stranded Atlantic bottlenosed dolphins should be readily identifiable by 1) the robust body, 2) relatively short beak, and 3) the 20-26 teeth in each upper jaw and 18-24 in each lower jaw.

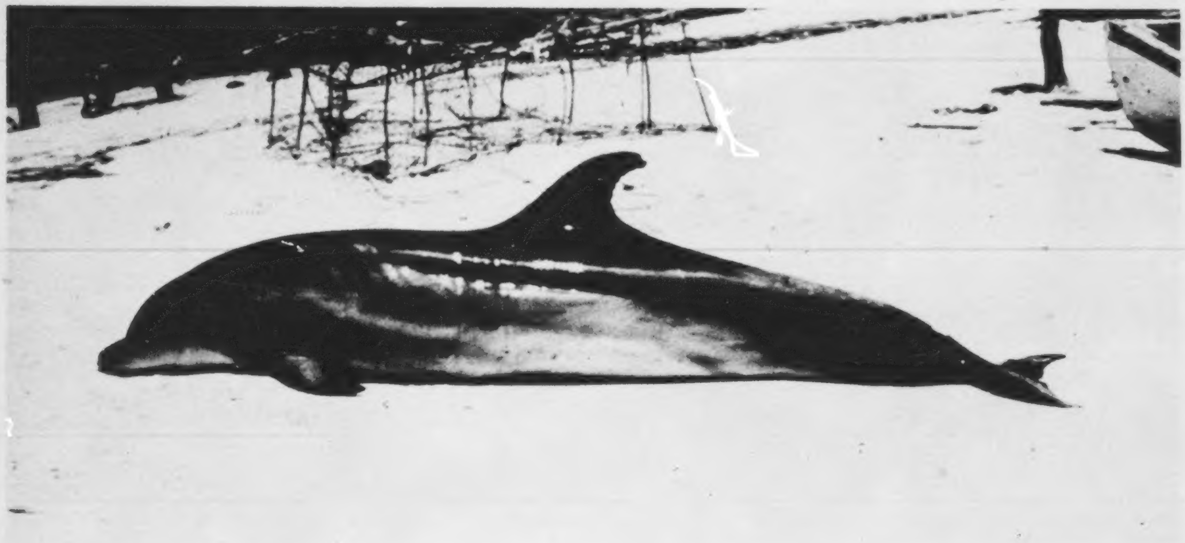

Figure 145.—An Atlantic bottlenosed dolphin taken at Isla La Blanquilla, off Venezuela. Because they inhabit shallow waters, Atlantic bottlenosed dolphins are infrequent victims of strandings. (*Photo courtesy of F. Cervigon.*)

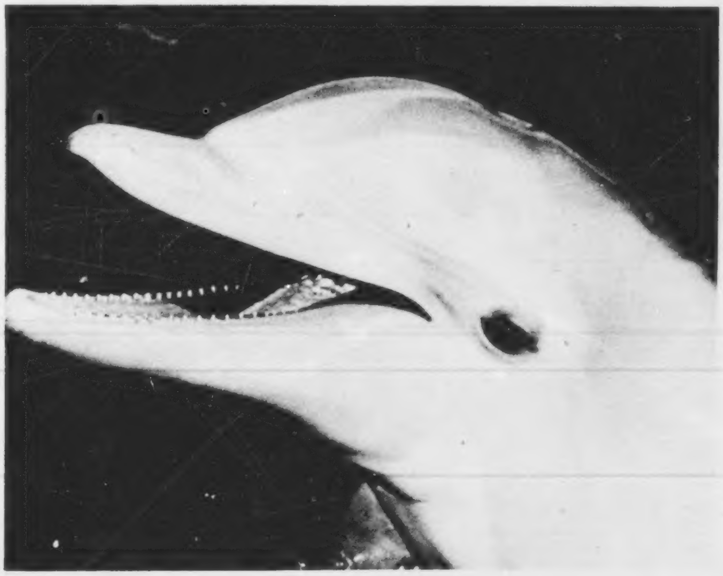

Figure 146.—Atlantic bottlenosed dolphins have from 20 to 26 teeth in each side of the upper jaw and from 18 to 24 in each side of the lower jaw. These teeth, sharply pointed in younger animals, may wear substantially as the animal ages. (*Photo courtesy of Wometco Miami Seaquarium.*)

GUIANA DOLPHIN (T)

Sotalia guianensis (P.-J. van Beneden 1864)

Other Common Names

None known.

Description

Guiana dolphins are the second smallest cetacean species in the western North Atlantic, reaching a maximum length of only about 5.6 feet (1.7 m).

Their body shape is very similar to that of the Atlantic bottlenosed dolphin, though the beak is less clearly demarcated from the forehead.

The rather prominent dorsal fin is nearly triangular, curving only slightly backwards near the tip.

Guiana dolphins are steel blue to dark brown on the back and white on the belly. There is sometimes a brownish band extending from the dark color of the back in front of the dorsal fin back towards but not reaching the anus.

Natural History Notes

Guiana dolphins are usually found in groups of fewer than 10 individuals.

May Be Confused With

Because of their limited range and specialized habitats, Guiana dolphins are unlikely to be confused with any other cetacean species except perhaps Atlantic bottlenosed dolphins (p. 128). These two species can be distinguished by the following characteristics:

Guiana Dolphins	**Atlantic Bottlenosed Dolphins**
SIZE	
To only 5.6 feet (1.7 m).	8 to as much as 12 feet (2.4 to 3.7 m).
DORSAL FIN	
More nearly triangular; curved only slightly backwards near tip.	Broad-based, tall, and falcate.
DISTRIBUTION	
Found in rivers and estuaries, extend into only very shallow nearshore waters on limited area of South American coast.	Sometimes found nearshore and in bays, river mouths, and estuaries, but extend farther offshore.

Distribution

Guiana dolphins are found in Lake Maracaibo, in the rivers of Guyana, and in the nearshore coastal waters of the northeastern portion of the Guianas.

Stranded Specimens

In their very limited range, stranded Guiana dolphins can be readily identifed by their extremely small size (to 5.6 feet [1.7 m]) and nearly triangular dorsal fin. Furthermore, in addition to the characteristics listed above distinguishing living Guiana dolphins from Atlantic bottlenosed dolphins, the species can be distinguished by differences in the numbers of teeth:

Atlantic Bottlenosed Dolphins	**Guiana Dolphins**
TEETH	
20-26 in each upper jaw; 18-26 in each lower jaw.	26-35 in each jaw; often ragged in arrangement.

Figure 147.—A Guiana dolphin from Kartabo, British Guiana. In the coastal portion of its range along the northeastern South American coast, this species is most likely to be confused with the Atlantic bottlenosed dolphin. Guiana dolphins are much smaller, rarely exceeding 5.6 feet (1.7 m), have a more triangular dorsal fin, and tend to be found more frequently in estuaries and rivers. (*Photo by A. B. Van Beneden from* Zoologica *VII* (4), *by permission of the New York Zoological Society.*)

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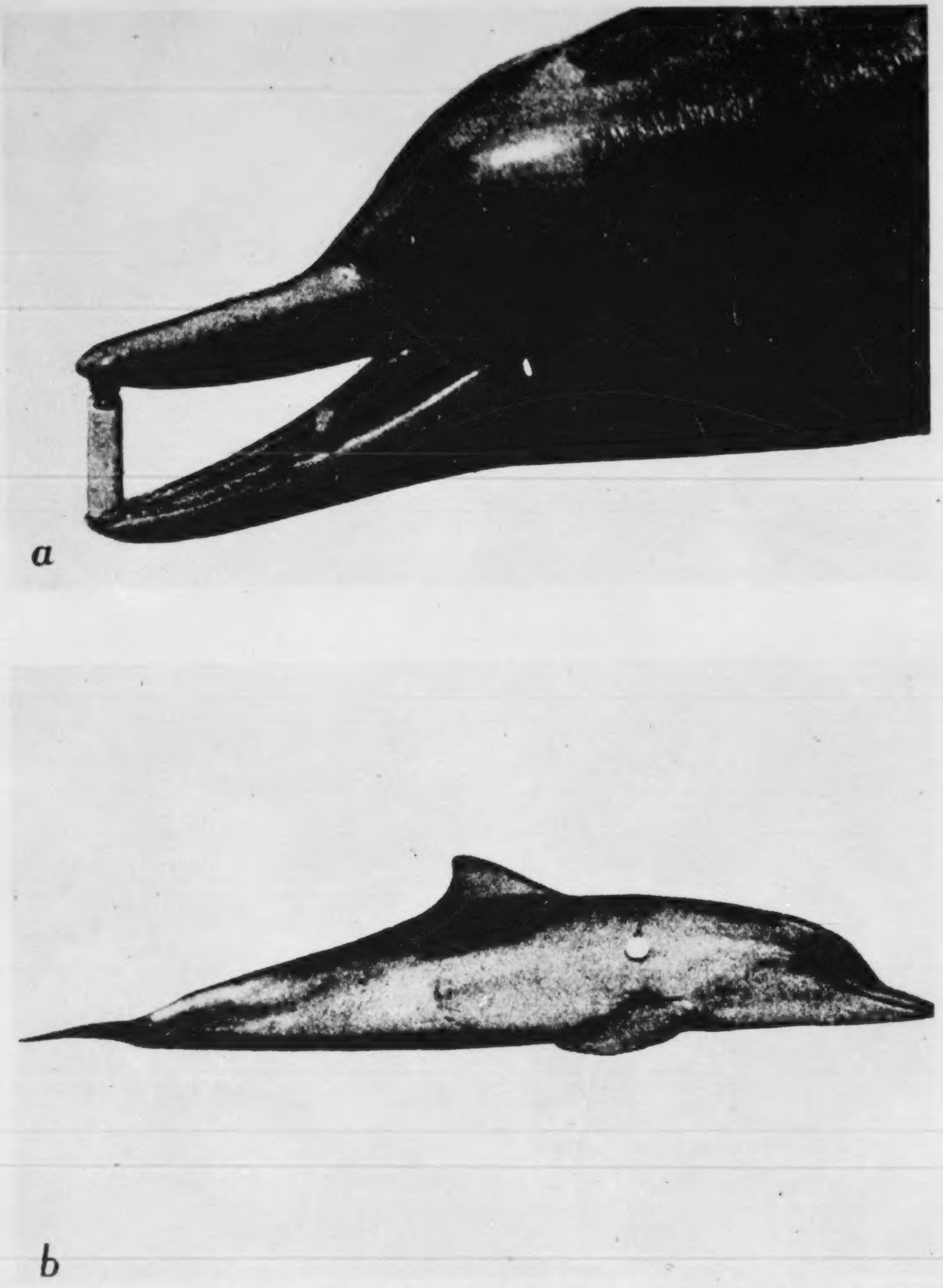


Figure 148. – Guiana dolphins harpooned in Kartabo, British Guiana. Guiana dolphins have from 26 to 35 teeth in each jaw. Atlantic bottlenosed dolphins, which are larger but somewhat similar in appearance, have from 20 to 26 teeth in each upper jaw and from 18 to 26 in each lower jaw. (*Photo by A. B. Van Beneden from* Zoologica *VII* (4), *by permission of the New York Zoological Society.*)

ROUGH-TOOTHED DOLPHIN (T)

Steno bredanensis (G. Cuvier in Lesson 1828)

Other Common Names

Rough-toothed porpoise, goggle-eyed porpoise.

Description

Rough-toothed dolphins reach a length of at least 8 feet (2.4 m). The coloration of the rough-toothed dolphins is quite variable. Individuals are often dark gray to dark purplish gray on the back with pinkish-white blotches on the sides and belly. The flippers and flukes are dark and the belly is white. Individuals are frequently scarred with numerous white streaks.

The most distinctive characteristic of the rough-toothed dolphin is its beak, which is quite long and slender, may be white or pinkish white along both sides, including one or both lips and the tip of the snout, and is not separated from the forehead by the transverse groove present in other long-snouted dolphins. Because the forehead and the sides of the head slope smoothly into the rostrum, when this animal is seen from above or from the side, its entire head appears very long and nearly conical.

Natural History Notes

Rough-toothed dolphins occur in small groups of 50 animals or fewer and are usually found off the edge of the continental slope. They may ride the bow waves.

May Be Confused With

In their offshore habitat, rough-toothed dolphins are most likely to be confused with Atlantic spotted dolphins (p. 104) and with Atlantic bottlenosed dolphins (p. 128). They may be distinguished from Atlantic spotted dolphins by the following:

Rough-Toothed Dolphin	Atlantic Spotted Dolphin
SNOUTS	
Long and slender; not clearly demarcated from forehead.	Moderate in length and clearly demarcated from forehead.

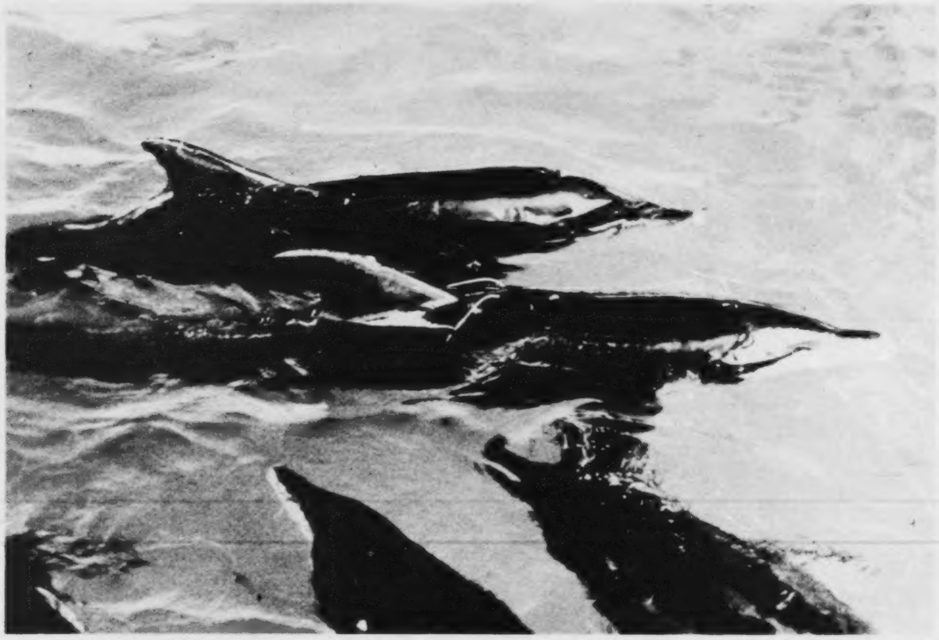


Figure 149.—Captive rough-toothed dolphins in Japan. Note the distinctive, smoothly tapering head and the white coloration of the sides and front of the snout. Rough-toothed dolphins are probably widely distributed in the offshore waters of the tropics. The streamers on the backs of the animals are marker tags (see Appendix A.) (*Photo courtesy of Japanese Whales Research Institute.*)

They may be distinguished from Atlantic bottlenosed dolphins by the characteristics tabularized on p. 128.

Even at a distance the blotched coloration of the side and the white coloration of the rostrum of rough-toothed dolphins may be visible. If closer examination is possible, the distinctive shape and coloration of the beak make positive identification easy.

Distribution

Though records of rough-toothed dolphins from the western North Atlantic are scant, the species is assumed to be widely distributed in deep tropical to warm temperate waters. It has been reported from Virginia, Georgia, Florida, the Gulf of Mexico, the West Indies, and off the northeastern coast of South America.

Stranded Specimens

In addition to the characteristics listed above for distinguishing living animals, stranded rough-toothed dolphins can be readily identified by the fact that the 20-27 fairly large teeth per jaw per side have a series of fine vertical wrinkles on the crown, a characteristic from which the species derives its common name. (These wrinkles are often difficult to detect.)

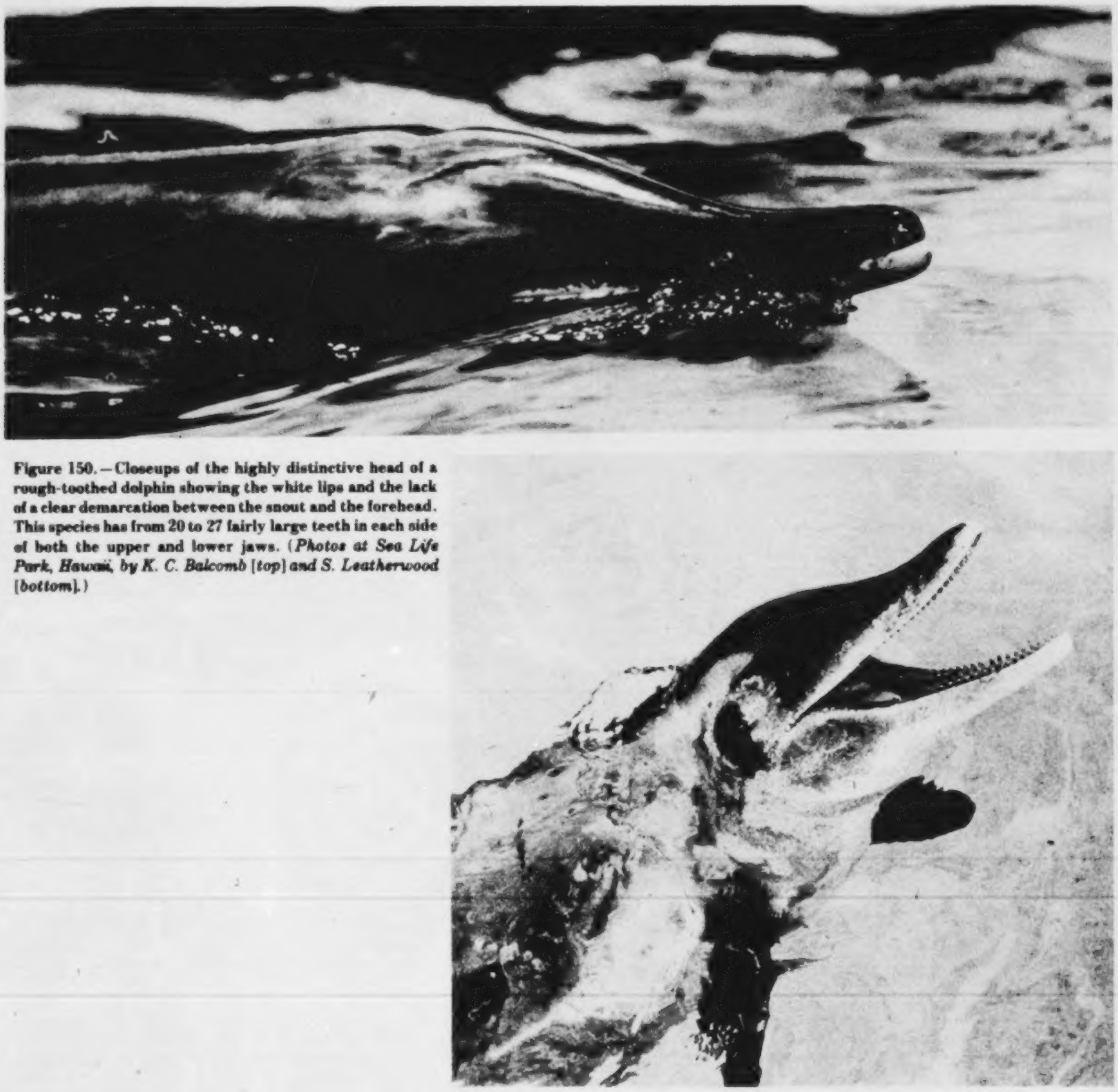


Figure 150.—Closeups of the highly distinctive head of a rough-toothed dolphin showing the white lips and the lack of a clear demarcation between the snout and the forehead. This species has from 20 to 27 fairly large teeth in each side of both the upper and lower jaws. (*Photos at Sea Life Park, Hawaii, by K. C. Balcomb* [*top*] *and S. Leatherwood* [*bottom*].)

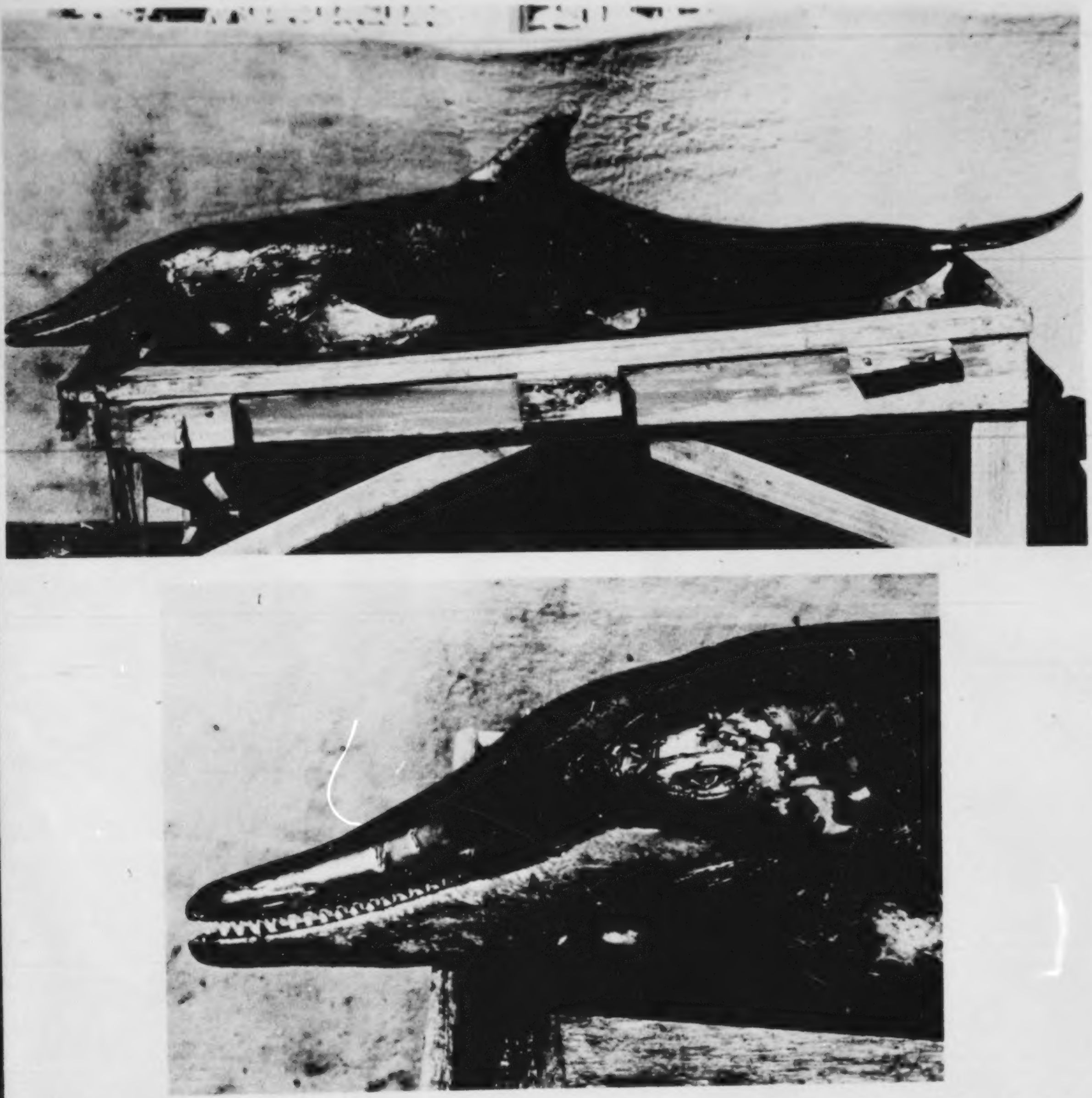


Figure 151.— A rough-toothed dolphin stranded near New Smyrna Beach, Fla. This species has from 20 to 27 fairly large teeth in each side of both the upper and lower jaws. Those teeth are sometimes marked by many fine vertical wrinkles along the crown, a characteristic from which the species derives its common name. (*Photos by D. K. Caldwell.*)

PYGMY KILLER WHALE (T)

Feresa attenuata Gray 1874

Other Common Names

Slender blackfish, slender pilot whale.

Description

Pygmy killer whales reach a length of about 8-9 feet (2.4-2.7 m). They are usually relatively slender-bodied with a rounded head, an underslung jaw, and no beak.

The falcate dorsal fin, located about the center of the back, is usually between 8 and 12 inches (20.3 and 30.1 cm) tall (though it may reach 15 inches [38 cm] in some individuals), is sometimes very distinctive, and resembles that of the Atlantic bottlenosed dolphin. The flippers are slightly rounded on the tips.

The color has been described as dark gray or black on the back, often lighter on the sides, extending higher in front of the dorsal fin and with a small zone of white on the underside, often a lighter gray area on the sides, and distinctive white regions around the lips. The chin may be completely white. This white zone on the chin, described as a "goatee," is often clearly visible in swimming animals.

May Be Confused With

The pygmy killer whale resembles the false killer whale but is much smaller and can be distinguished at close range by the zones of white coloration. False killer whales are almost all black and reach a length of up to at least 18 feet (5.5 m). Pygmy killer whales are dark gray on the back, often lighter on the sides, and show a region of white on the belly which may extend so high up onto the sides that it is visible on a swimming animal. Further, they reach only 8-9 feet (2.4-2.7 m).

Pygmy killer whales may also be confused with the similarly sized and colored many-toothed blackfish. So little is known of the two species' appearance and behavior at sea that it is doubtful that they can be successfully distinguished, though many-toothed blackfish apparently lack the white region often seen on the sides of pygmy killer whales. Further, pygmy killer whales have rounded flippers and smoothly tapered heads, while those of the many-toothed blackfish are pointed on the tip and more sharpely pointed (often described as a parrot beak).

Distribution

Pygmy killer whales are probably distributed in the tropical and subtropical waters of the western North Atlantic. They have been reported from Texas, the Atlantic coast of Florida, and St. Vincent Island, Lesser Antilles. Records of the species from the other oceans of the world suggest that its distribution is limited to tropical and subtropical waters.

Stranded Specimens

Stranded pygmy killer whales can be clearly distinguished from both the false killer whale and the many-toothed blackfish. In addition to the differences discussed above, the following are key differences between the pygmy and false killer whales:

Pygmy Killer Whale	**False Killer Whale**
TEETH	
10-13 in each side of upper and lower jaws; lower teeth smaller.	8-11 per jaw per side, prominent.
VENTRAL COLORATION	
White from anus to under tail stock, white may extend up sides.	Dark from anus to tail stock; lighter pale gray area forward between flippers.
FLIPPERS	
Smoothly rounded.	Characteristic hump on forward margin.

Pygmy killer whales can be distinguished from many-toothed blackfish on the basis of the second species' larger number of teeth. (Many-toothed blackfish have from 22 to 25 teeth in the upper jaw and from 21 to 24 in the lower jaw.)

Figure 152.—Pygmy killer whales at sea northwest of Hawaii (top) off the island of Oahu, Hawaii (middle), and from southeastern Florida in the tank at the Wometco Miami Seaquarium (bottom). When swimming rapidly, pygmy killer whales may closely resemble the much larger false killer whales. In addition to their much smaller size, rarely exceeding 9 feet (2.7 m), however, pygmy killer whales can be distinguished by their more rounded head, the white coloration of the lips and chin, and the white zone on the belly, sometimes extending up the sides. ***(Photos by S. Ohsumi [top]; J. Naughton, National Marine Fisheries Service and courtesy of E. Shallenberger, Sea Life Park [middle]; and courtesy of Wometco Miami Seaquarium [bottom].)***

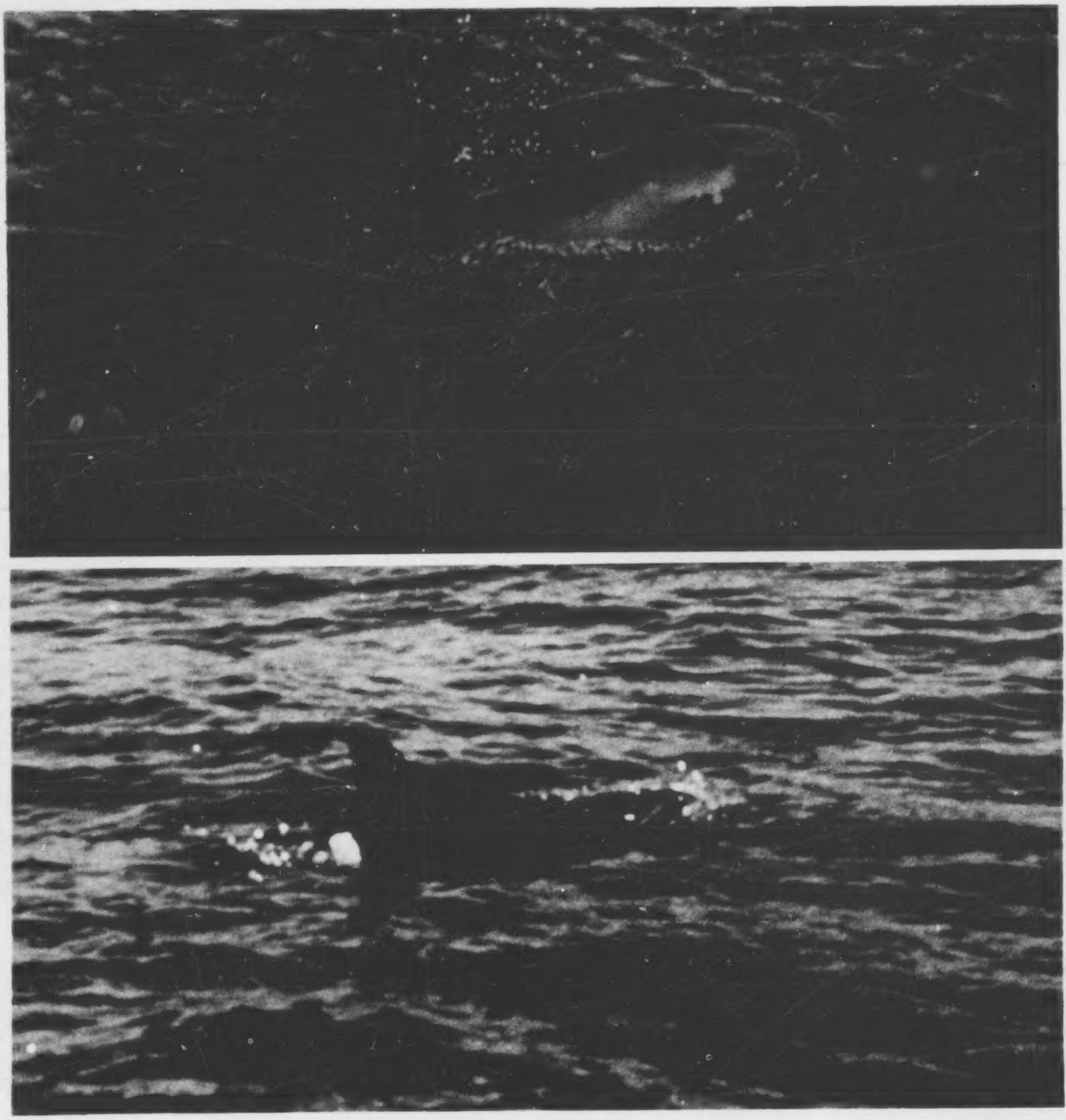


Figure 153.—Pygmy killer whales 5 miles off Kaena Point, Oahu, Hawaii. These individuals were dark on the back with varying degrees of lighter coloration on the sides, extending high onto the sides in front of the dorsal fin. Many had a white "goatee" on the chin and lower jaw. The prominent dorsal fin is characteristic. (*Photos by E. Shallenberger, courtesy of Sea Life Park, Hawaii.*)

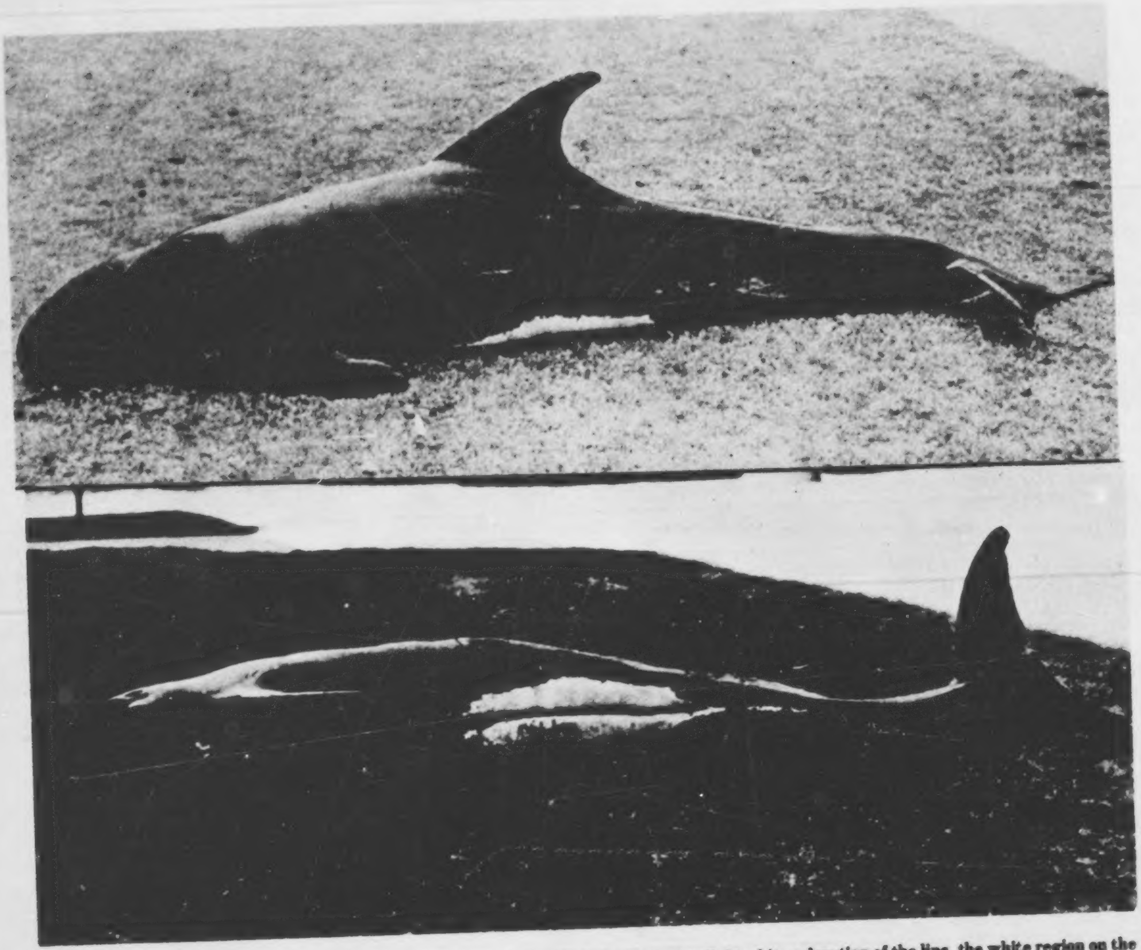


Figure 154.—Side and belly views of a pygmy killer whale from South Africa. Note the slight white coloration of the lips, the white region on the ventral surface (extending up onto the sides just below the dorsal fin), and the falcate sharply pointed dorsal fin. Note also the flippers, which lack the hump on the forward margin characteristic of false killer whales. (*Photos courtesy of P. B. Best.*)

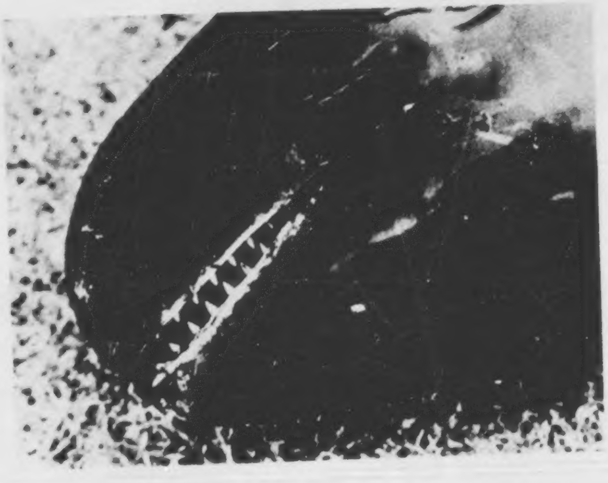


Figure 155.—Pygmy killer whales have from 8 to 11 teeth in each side of the upper jaw and from 11 to 13 in each side of the lower jaw. Many specimens reportedly have one fewer on the right than on the left side. The teeth are smaller than those of the false killer whale and far less numerous than those of the more closely sized many-toothed blackfish. Note also the white lips. (*Photo courtesy of P. B. Best.*)

MANY-TOOTHED BLACKFISH (T)

Peponocephala electra (Gray 1846)

Other Common Names

Hawaiian blackfish, melon-headed whale.

Description

Many-toothed blackfish reach lengths of at least 9 feet (2.7 m) and are similar in body shape to the larger false killer whale and the similar-sized pygmy killer whale. The body is elongated and slim with a rather slim tail stock. In general, the head is shaped like that of the false killer whale but has a sharper appearance to the snout, sometimes described as a parrot-beak. The forehead is rounded, slightly overhanging the lower jaw, and has no beak. The dorsal fin is up to 10 inches (25.4 cm). It is probably very distinctive as the animals surface to breathe. Many-toothed blackfish are black on the back and slightly lighter on the belly. The areas around the anus and genitals and the lips are unpigmented. Many-toothed blackfish are presumably rare.

May Be Confused With

Many-toothed blackfish may be confused with either the false killer whale or the pygmy killer whale. They are considerably smaller than the false killer whale, have a slightly more pointed snout, and lack the prominent humplike forward margin on the flippers which is characteristic of the false killer whale.

They are approximately the same size as pygmy killer whales, but the white area around the genitals which extends up onto the side in pygmy killer whales may be lacking in many-toothed blackfish. This species has pointed flippers, while those of pygmy killer whales are rounded on the tips. Many-toothed blackfish also have a slightly more pointed snout. Otherwise, the two species are virtually indistinguishable in encounters at sea.

Distribution

Although many-toothed blackfish have not yet been reported in the western North Atlantic, they are included in this guide because of a record from the eastern tropical North Atlantic and the known tropical distribution in other areas.

Stranded Specimens

Stranded many-toothed blackfish can be distinguished from false killer and pygmy killer whales by the number of teeth alone. Many-toothed blackfish have more than 15 per side per jaw (usually 21-25); both other species have less than 15.

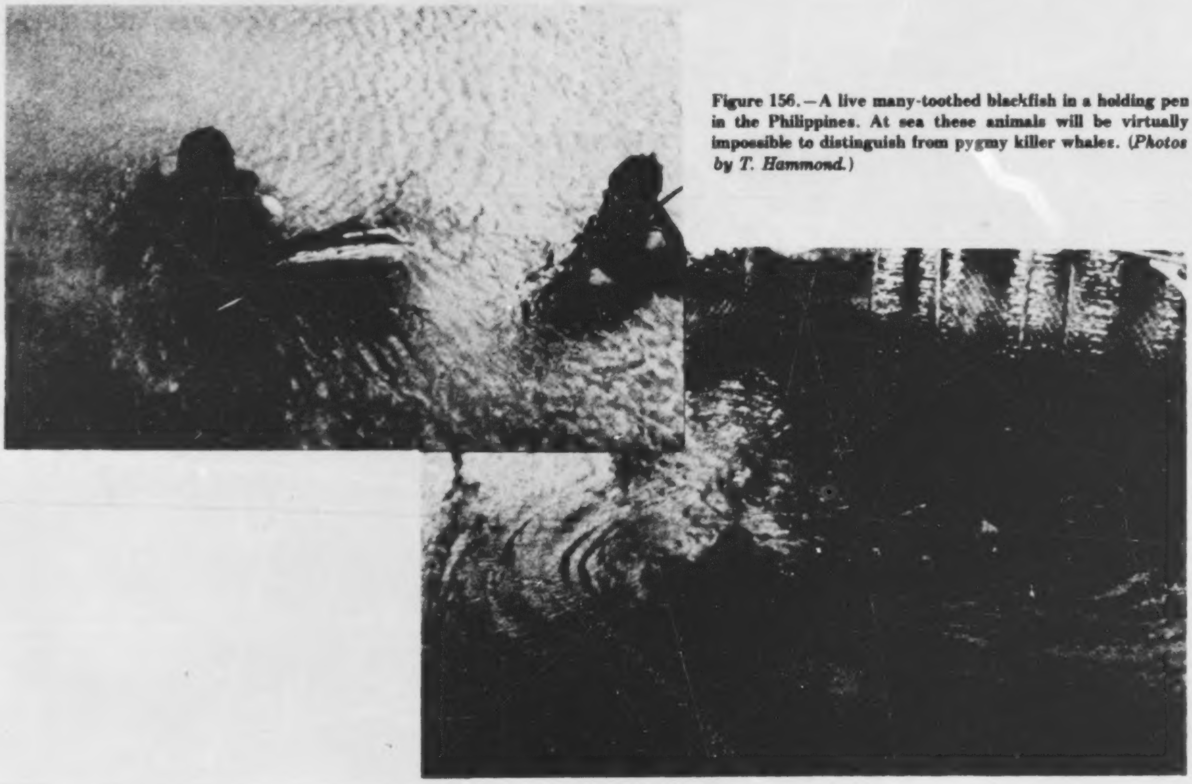


Figure 156.—A live many-toothed blackfish in a holding pen in the Philippines. At sea these animals will be virtually impossible to distinguish from pygmy killer whales. (*Photos by T. Hammond.*)

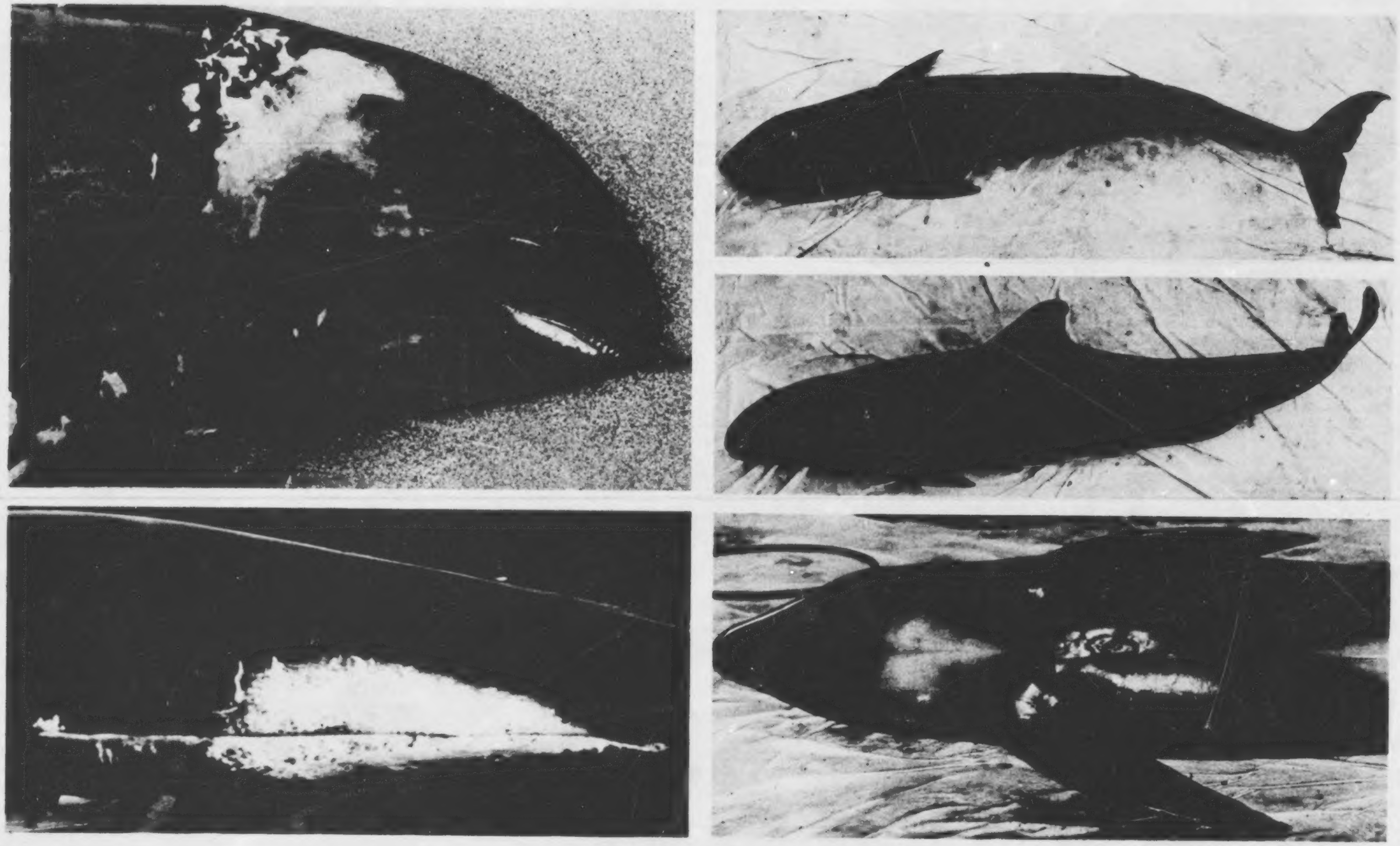


Figure 157. – A many-toothed blackfish stranded in Hawaii. This species is smaller than the false killer whale and can be positively identified by the number of teeth, larger than any other blackfish. Many-toothed blackfish have from 21 to 25 teeth per side in both the upper and lower jaws. Other blackfish species have fewer than 15; otherwise, with the exception of differences in flipper shape (those of this species are pointed while those of pygmy killer whales are rounded on the tip), coloration and body shape of the two species are similar. (*Photo courtesy of T. Dohl.*)

PYGMY SPERM WHALE (T)

Kogia breviceps (Blainville 1838)

Other Common Names

None known.

Description

Pygmy sperm whales reach a length of at least 11 feet (3.4 m). They are characterized by 1) an extremely robust body that rapidly tapers near the tail, 2) a squarish head, and 3) a narrow, underslung lower jaw which is located well behind the tip of the snout. Along the side of the head, in approximately the same position where gill slits would be located on a fish of comparable size, there is a crescent-shaped bracket mark, often called a false gill.

The flippers, which are smoothly curved on the forward margin and may reach a length of 18 inches (45.7 cm) or more on an adult specimen, are located well forward on the body, just below and behind the bracket mark.

The dorsal fin is very small, falcate, and located in the latter half of the back.

Though coloration can be described only from stranded specimens and a few encounters with living animals, pygmy sperm whales appear to be dark steel gray on the back, shading to a lighter gray on the sides, and gradually fading to a dull white on the belly. The outer surface of the flippers and the upper surface of the tail flukes are also steel gray.

Natural History Notes

From the few accounts, the following may be summarized about the behavior of pygmy sperm whales at sea: They reportedly usually rise slowly to the surface to breathe, produce a blow that is inconspicuous, and do not normally roll aggressively at the surface like most other species of small whales. They reportedly fold their flippers flat against their bodies when swimming. They have been reported to lie motionless in the water with the back of the head on the surface and the tail hanging loosely down in the water. (A similar behavior in sperm whales has made them a minor hazard to shipping, since it has resulted in some collisions with ships.) When they are startled in this posture, they may defecate, issuing a cloud of reddish brown to rust-colored fece. Beached pygmy sperm whales have also been observed to defecate a fine chocolate feces.

Pygmy sperm whales apparently feed primarily on squid, but do take fish as well.

May Be Confused With

In general, when they can be examined at close range, pygmy sperm whales are so distinctive that they are unlikely to be confused with any other species except perhaps the dwarf sperm whales. At a distance, they might be confused with small individuals of any of the beaked-whale species (p. 78) that also have a relatively small, falcate dorsal fin located in the latter third of the back. Closer examination should permit easy separation, however, since the pygmy sperm whale has a blunted head, while the beaked whales, as the name implies, have elongated "dolphinlike" beaks and are considerably larger. At sea, pygmy sperm whales are most likely to be confused with their cousins the dwarf sperm whales (p. 148 and Fig. 160). The two species can be distinguished as follows:

Pygmy Sperm Whale	**Dwarf Sperm Whale**
MAXIMUM SIZE	
To 11 feet (3.4 m).	To 9 feet (2.7 m).
DORSAL FIN	
Small to 8 inches (20.3 cm), falcate; located in latter third of back.	Taller, more like that of bottlenosed dolphins; located near the midpoint of the back.
COLORATION	
Both species are dark steel gray on the back, grading to lighter on the belly.	

Distribution

Because they have been rarely observed at sea, normal ranges for this species are not known. Based on stranding records, however, the following can be stated. In the western North Atlantic, pygmy sperm whales have been found as far north as Sable Island, Halifax, Nova Scotia, as far south as Cuba, and as far west as Texas in the Gulf of Mexico. They are frequently found stranded along the Atlantic coast of Florida and throughout the eastern and northern Gulf of Mexico.

Stranded Specimens

Because of the distinctive characters of the genus, stranded pygmy and dwarf sperm whales are unlikely to be confused with any other species of cetacean, though the rather narrow underslung jaw and the blunted head may result in their casual dismissal by some beach walkers as stranded sharks. The two species of *Kogia* may be distinguished by the following:

Pygmy Sperm Whale	**Dwarf Sperm Whale**
TEETH	
12-16 (rarely 10-11) in lower jaw are larger; no teeth in upper.	8-11 (rarely 13) small and extremely sharp teeth in lower jaw; sometimes have up to 3 teeth in each upper jaw.
THROAT	
No creases or grooves on throat.	Several short irregular creases or grooves on throat.

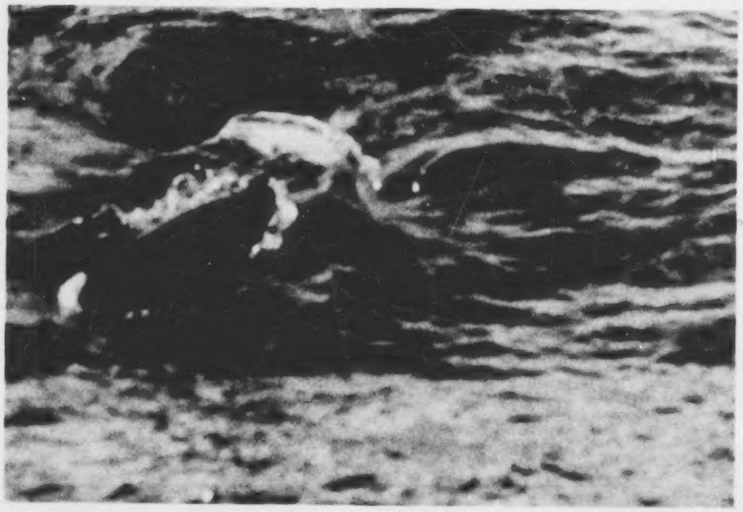


Figure 158. – In this rare photograph of a pygmy sperm whale at sea in the Pacific, the animal was startled by the approaching vessel, circled quickly, and then dived out of sight. The trail of material visible in the water in front of and to the right of the animal is feces, reddish brown to rust in color. Startled whales and porpoises often defecate in this manner. (*Photo by S. Ohsumi.*)

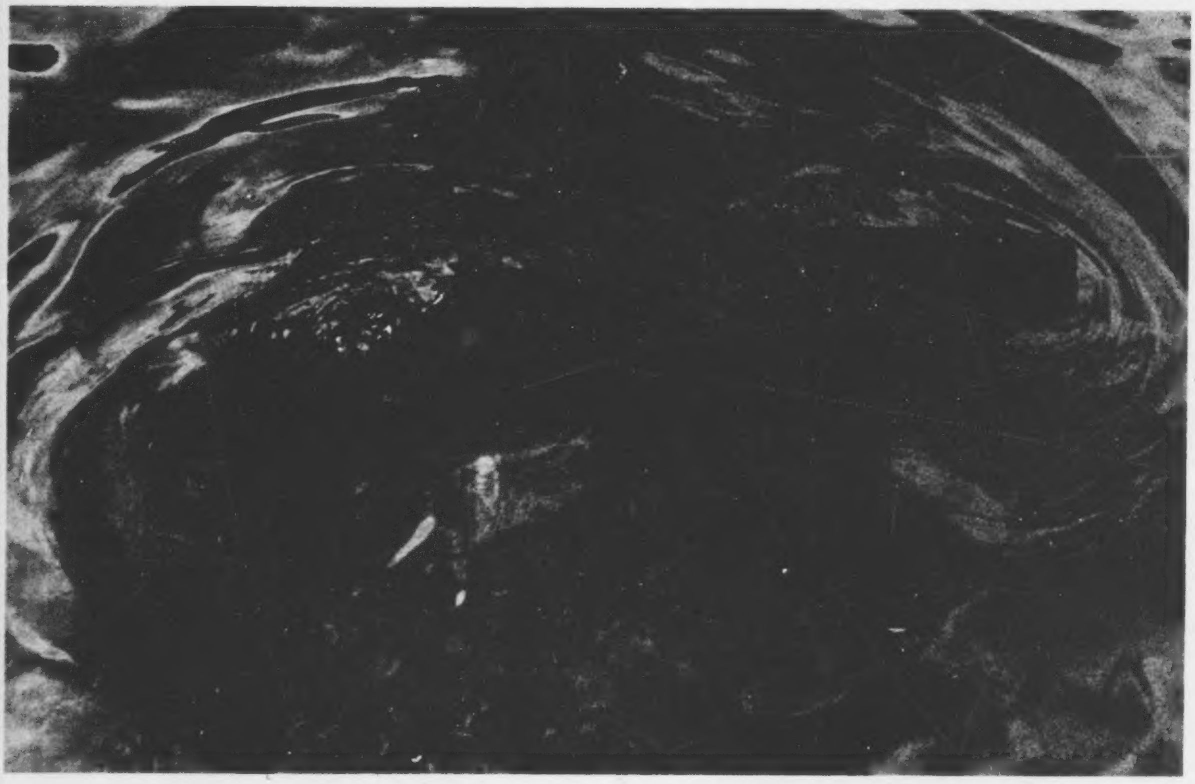


Figure 159. – A young pygmy sperm whale swimming in a tank at the New York Aquarium. Note the shape and position of the dorsal fin and the shape of the head. (*Photo by H. E. Winn.*)

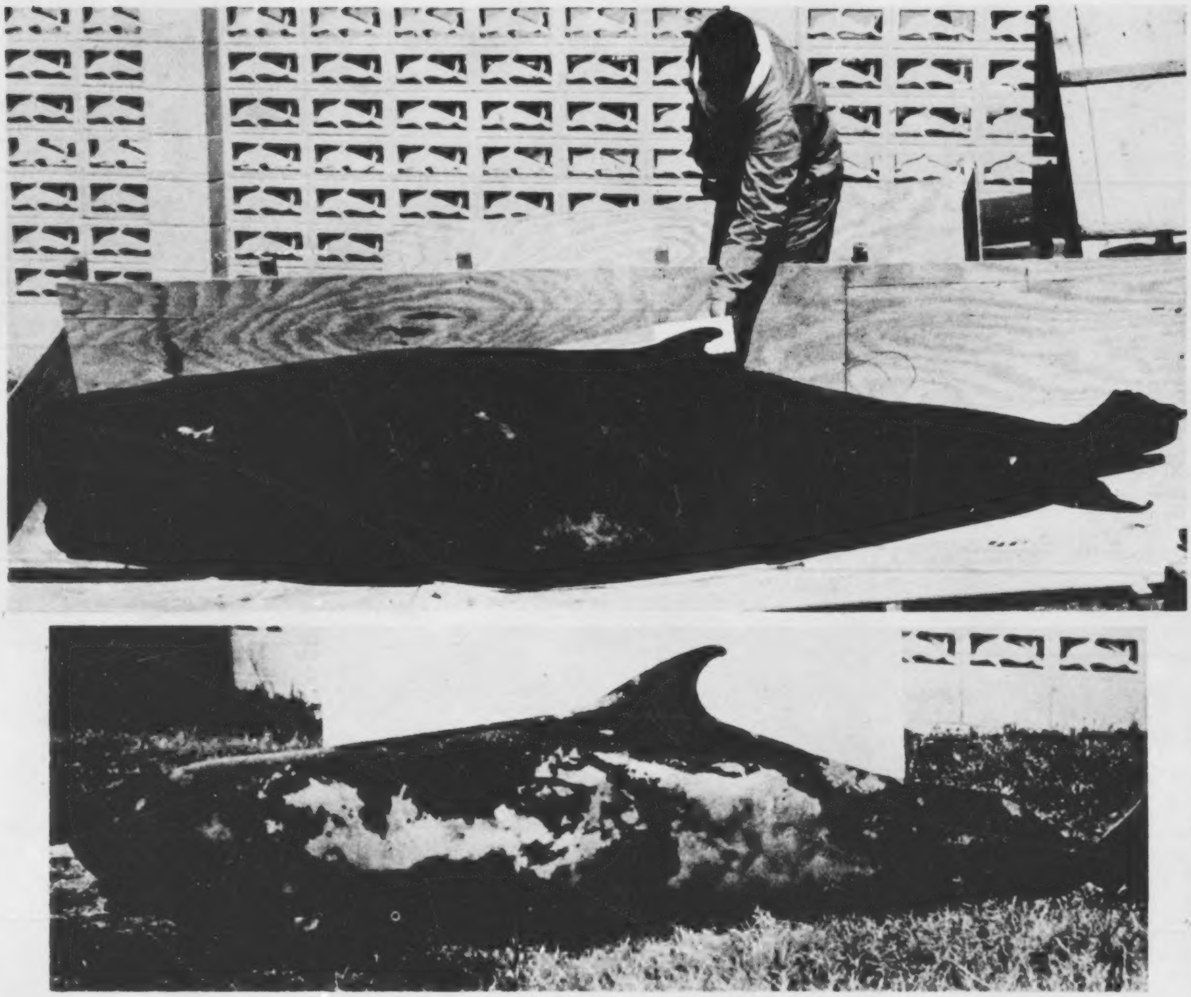


Figure 160.—On the beach the two species of *Kogia* can be readily distinguished. The pygmy sperm whale, *K. breviceps*, (top) reaches a length of about 11 feet (3.4 m); its dorsal fin is a small nubbin located in the latter half of the back. The dwarf sperm whale, *K. simus*, (bottom) reaches only about 9 feet (2.7 m); its dorsal fin, much taller and more "dolphinlike" in appearance, is located near the middle of the back. Coloration of fresh specimens is probably similar for both species—the lightened areas in the lower photograph are the result of decomposition. (*Photos from Jekyll Island, Ga.* [*top*] *and Atlantic Beach, Fla.* [*bottom*] *by D. K. Caldwell.*).

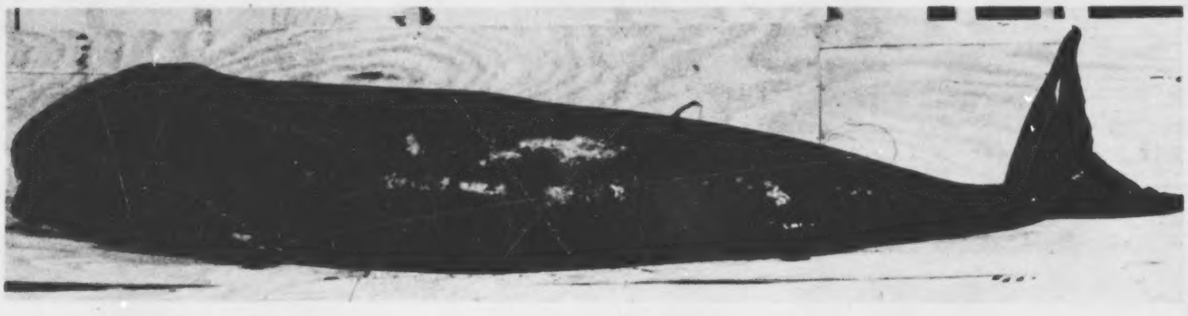


Figure 161.—Ventral view of a female pygmy sperm whale from Jekyll Island, Ga. Note the position and shape of the flippers and mouth, and the abrupt tapering of the body at the tail stock. (*Photo by D. K. Caldwell.*)

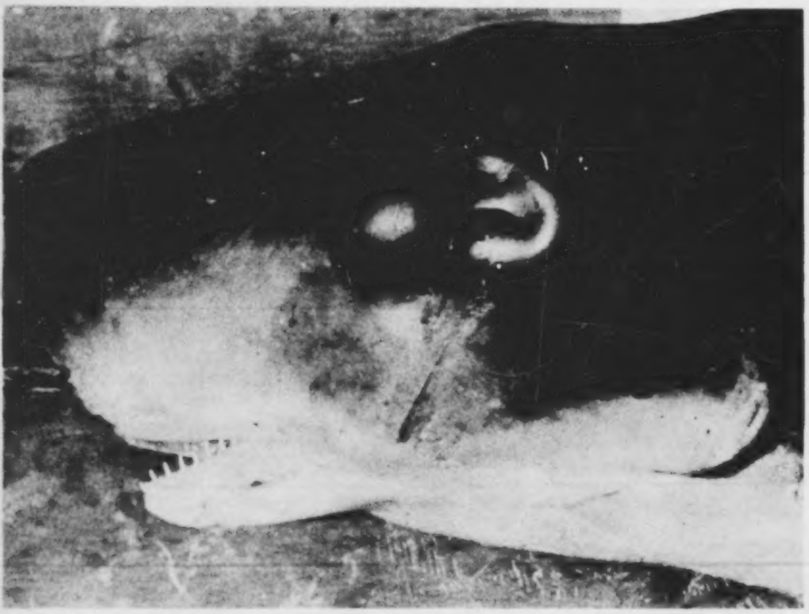


Figure 162.—Head of a pygmy sperm whale from northeastern Florida showing gill-like, lightly pigmented "bracket marks." (*Photo by F. G. Wood.*)

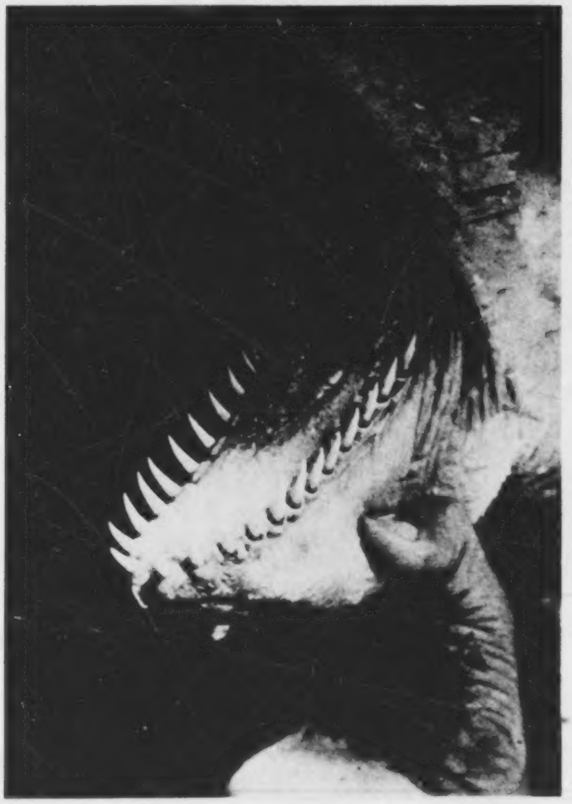


Figure 163.—A detailed view of the mouth of a pygmy sperm whale from the east coast of Florida. In both species of *Kogia* these long, curved, needle-sharp teeth, found in only the lower jaw, lock into sockets in the upper jaw. Pygmy sperm whales have from 12 to 16 (rarely 10 or 11) pairs of teeth; dwarf sperm whales have from 8 to 11 (rarely 13) pairs. (*Photo by D. K. Caldwell.*)

DWARF SPERM WHALE (T)

Kogia simus (Owen 1866)

Other Common Names

Rat porpoise (West Indies).

Description

Dwarf sperm whales reach an overall length of approximately 9 feet (2.7 m). Like the other species of *Kogia*, the pygmy sperm whale (p. 144), the dwarf sperm whales are characterized by 1) a squarish head, 2) an extremely robust body which tapers rapidly near the tail stock, 3) a narrow, underslung lower jaw, and 4) a bracket mark or false gill on the side of the head.

The dorsal fin of this species is tall and falcate, closely resembling that of the Atlantic bottlenosed dolphin, and is located near the midpoint of the back. There are several short, irregular creases or grooves on the throat similar to those found on the sperm whale (see Figs. 60, 165).

Dwarf sperm whales are dark steel gray on the back, grading to lighter gray on the sides, and fading to dull white on the belly.

May Be Confused With

Because of their tall, falcate dorsal fin, dwarf sperm whales may be confused at a distance with any of the small dolphin species. Their all-black or dark steel-gray coloration and the blunted head increase the likelihood that they can be confused with pygmy killer whales or many-toothed blackfish. They will have to be examined at close range before they can be distinguished.

Dwarf sperm whales may also be confused with pygmy sperm whales (p. 144 and Fig. 160). The two species can be differentiated by the characteristics tabularized on p. 144.

Distribution

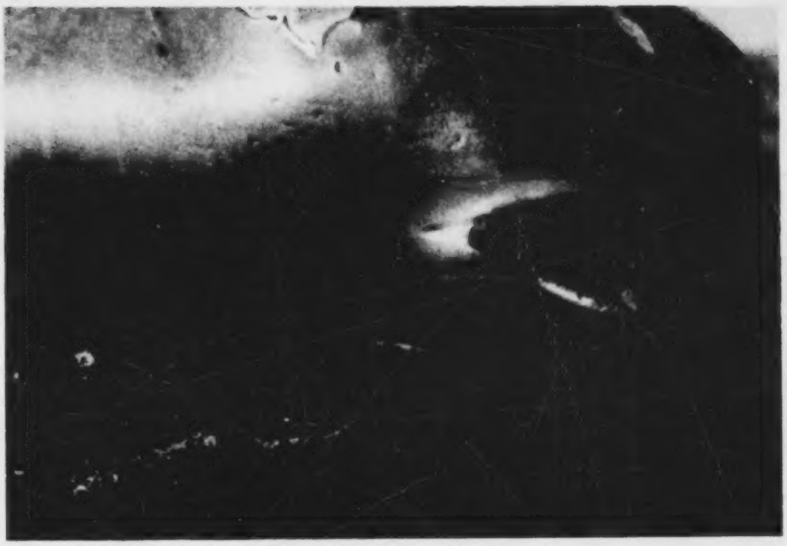
Since it has only recently been recognized as a species distinct from the pygmy sperm whale and even more recently given a common name, records of dwarf sperm whales may have been confused with those of its close relatives. The dwarf sperm whale has been reported from at least Georgia south to St. Vincent, Lesser Antilles, and throughout the eastern and northern Gulf of Mexico. It is highly likely that this species, like the pygmy sperm whale, extends further to the north.

Stranded Specimens

Because of the distinctive characteristics of the genus, neither species of stranded *Kogia* is likely to be confused with any other species. They can be distinguished from one another by the characteristics tabularized on p. 144.

Figure 164.—A dwarf sperm whale stranded near St. Augustine, Fla., shown swimming in the tank at Marineland of Florida. In this species the dorsal fin is taller than that of the pygmy sperm whale and is located near the midpoint of the back (see Figs. 159 and 160). (*Photo courtesy of Marineland of Florida.*)

Figure 165. – Dwarf sperm whales have several short creases on the throat, similar to those found on the sperm whale (see Fig. 60); pygmy sperm whales lack these creases. To compare other features of the two species, refer back to Figure 160. (*Photo by D. K. Caldwell.*)



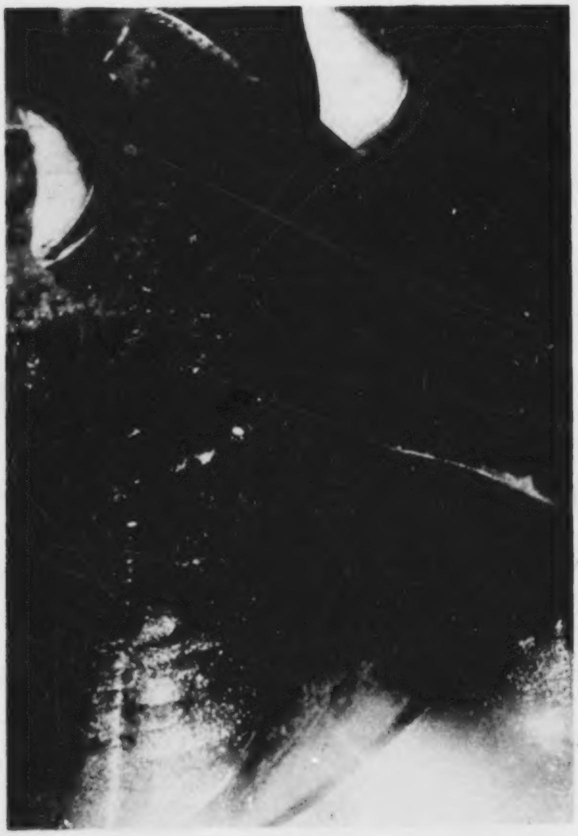


Figure 166. – Closeup of the tail flukes of a dwarf sperm whale from the Florida east coast. Note that the dorsal ridge extends almost to the notch in the flukes. (*Photo by W. A. Huck, courtesy of Marineland of Florida.*)

HARBOR PORPOISE (T)

Phocoena phocoena (Linnaeus 1758)

Other Common Names

Common porpoise, herring hog, puffing pig (Newfoundland and New England), Pourcils (Quebec), harbour porpoise.

Description

The harbor porpoise is the smallest cetacean species in the western North Atlantic Ocean, reaching a maximum overall length of about 5 feet (1.5 m). Its most distinctive identifying features in encounters at sea are 1) the small, chunky body; 2) the coloration, dark brown or gray on the back, fading to lighter grayish brown on the sides, often with speckling in the transition zone, and white on the belly extending farther up on the sides in front of the dorsal fin; 3) the small rounded head, lacking a distinctive beak; 4) the small, triangular dorsal fin; and 5) the shallow, inshore northerly distribution.

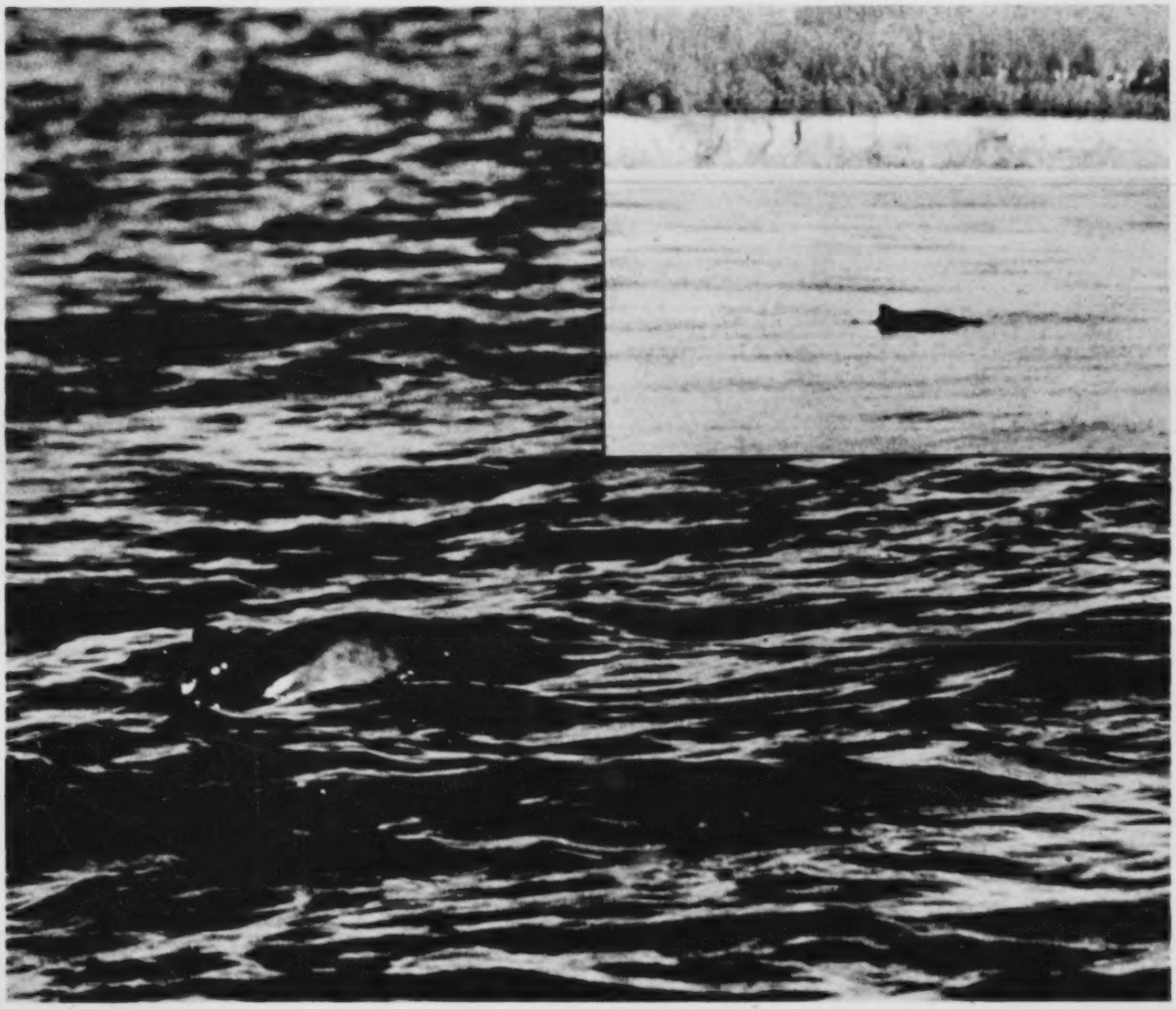


Figure 167. – Two views of a harbor porpoise just offshore from Rio del Mar, Seaside, Calif. Note the small size (usually less than 5 feet [1.5 m]), the small triangular dorsal fin, the dark brownish color of the back, and the lighter color of the sides and belly intruding higher up in front of the dorsal fin. Harbor porpoises frequent inshore areas, shallow bays, estuaries and harbors, and reportedly do not approach moving vessels nor ride bow waves. ***(Photos by J. D. Hall.)***

Natural History Notes

As the name implies, the harbor porpoise inhabits bays, harbors, river mouths, and all the relatively shallow inshore water between. Though it may travel in schools of nearly a hundred individuals, it is more often seen in pairs or in small groups of from 5 to 10 individuals. It often swims quietly at the surface. It will not ride the bow wave and is very difficult to approach closely by boat.

May Be Confused With

The harbor porpoise is not known to associate with dolphins but is sometimes seen in close proximity to fin whales and humpback whales off the Canadian coast in spring and summer. Because of its northern inshore habitat, the harbor porpoise is not likely to be confused with any other cetacean.

Distribution

Harbor porpoises are restricted to the colder waters of the western North Atlantic Ocean. They have been reported from North Carolina north to the Davis Straits and the waters of southwestern Greenland. Within this range they are probably most common in the Bay of Fundy and off southwest Greenland.

Stranded Specimens

In addition to the characteristics described above for living animals, stranded harbor porpoises can be readily identified by the small spade-shaped teeth, 22-28 per jaw.

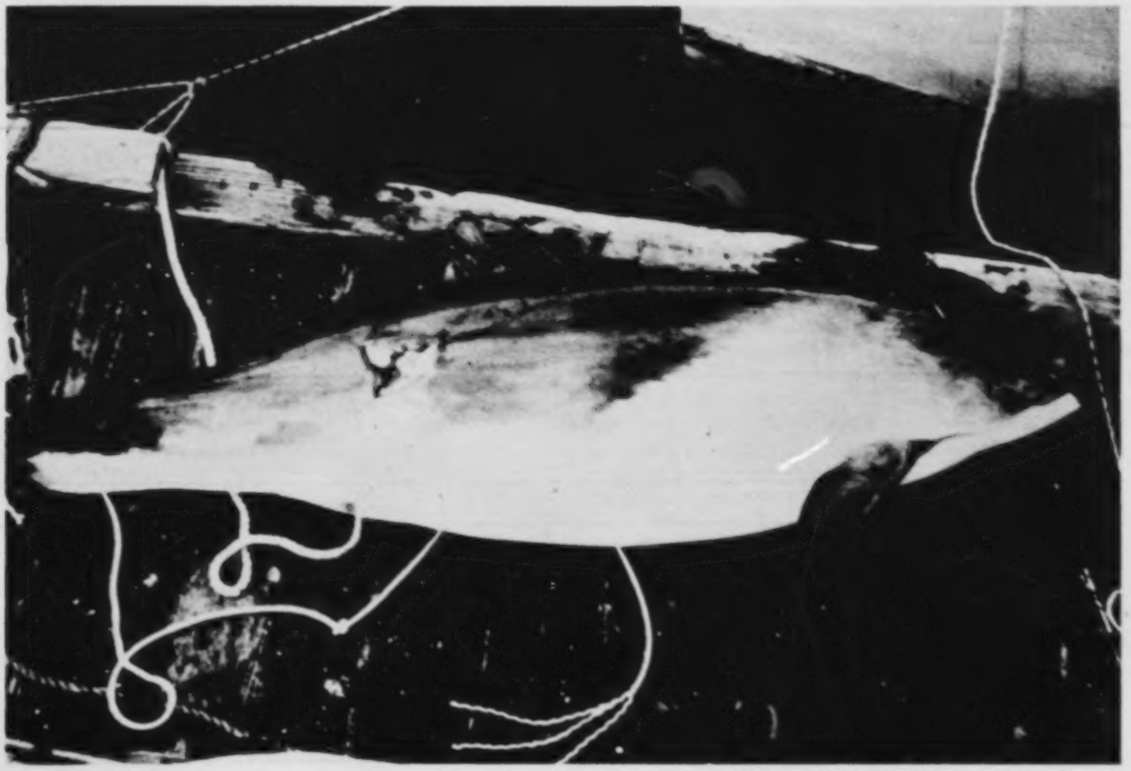


Figure 168. – A harbor porpoise harpooned in Passamaquoddy Bay, New Brunswick. Harbor porpoises have from 23 to 28 small, spade-shaped teeth in each upper jaw and from 22 to 26 in each lower jaw. Note the rounded head, the absence of a beak, and the triangular dorsal fin. (*Photo by D. E. Gaskin.*)

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Obviously this guide could not have been produced without the cooperation of many people. Of over 450 individuals and scientific organizations contacted in 14 countries, 255 responded to our letters and well over 100 provided photographs for review and selection. We were particularly pleased that for the majority of the species found in the western North Atlantic our most difficult problem was narrowing the choices and ultimately selecting illustrations from the many good materials made available to us. Although there are far too many contributors to mention all by name, their prompt and enthusiastic responses to requests for help are gratefully acknowledged, whether or not their materials were used.

Although photo credits follow each figure, we would particularly like to cite the generosity of Marineland of Florida, Hideo Omura of the Japanese Whales Research Institute, J.G. Mead of the U.S. National Museum, K.C. Balcomb of Moclips Cetological Society, Seiji Ohsumi of the Far Seas Fisheries Research Laboratory, Jack Lentfer of the Alaskan Department of Fish and Game, the U.S. Naval Undersea Center (NUC), The University of Rhode Island, and William F. Perrin of the National Marine Fisheries Service (NMFS). Photographs by Taruski, McCann, Hain, Wheeler, and Rigley are in Winn's files. All others are in the files of Leatherwood and Caldwell. The illustrations for Figures B1 and D1 were prepared by George Galich of NUC. All other illustrations were prepared by Lois Winn.

The extensive and often tedious job of preparing black and white photographs of suitable format from the vast array of black and white and color negatives and prints and from color transparencies was accomplished at the NUC Photographic Laboratory by the able team of Domingo Sanchez, Ray Krenik, Jeanne Lucas, and Alan McPhee.

George E. Lingle and John C. Moore assisted with gathering and reviewing the literature and with cataloging and screening photo materials.

The various drafts of the manuscript were typed by Linda Thomson, Margaret Alvarez, and Sandra Nolan. Sandra Peterson assisted with proofreading the later drafts.

In preparing this guide we drew freely from the literature on cetaceans of this region and supplemented it with our own observations and with unpublished notes provided by our colleagues. A partial list of materials used, each a good source of reference material on cetaceans in general or on cetaceans of the western North Atlantic in particular, is provided in the following section, "Selected Bibliography."

All of the following colleagues read all or part of the manuscript and made useful suggestions for its improvement: K.C. Balcomb, W.C. Cummings, J.G. Mead, Hideo Omura, W.F. Perrin, F.K. Rodgers, Allen N. Saltzman, D.E. Sergeant, W.A. Watkins, A.A. Wolman, and F.G. Wood.

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In addition to securing funds for the preparation and publication of this guide, Paul Sund, Platforms of Opportunity Program, NMFS, Tiburon, Calif., provided continuing help and criticism.

To these and to all who use this guide to further help knowledge about the cetaceans of the western North Atlantic, we are grateful.

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APPENDIX A

TAGS ON WHALES, DOLPHINS, AND PORPOISES

Field studies of cetaceans are very difficult. First, it is extremely hard to be positive that an individual or a group of animals is the same from one encounter to the next. This means that it is nearly impossible to determine, for example, whether herds of animals are resident in an area or only seasonal visitors. Without information of this kind, determinations vital to population management, such as sizes of populations and natural ranges, are impossible to make.

Secondly, as we frequently point out in this guide, individual cetaceans are usually visible to a surface observer only during the brief moments when they break the air-water interface to breathe. The majority of their vital activities (e.g., feeding, reproduction, communication, establishing and maintaining position within the herd, and defending against natural enemies) take place primarily below the surface, well out of view to a surface observer.

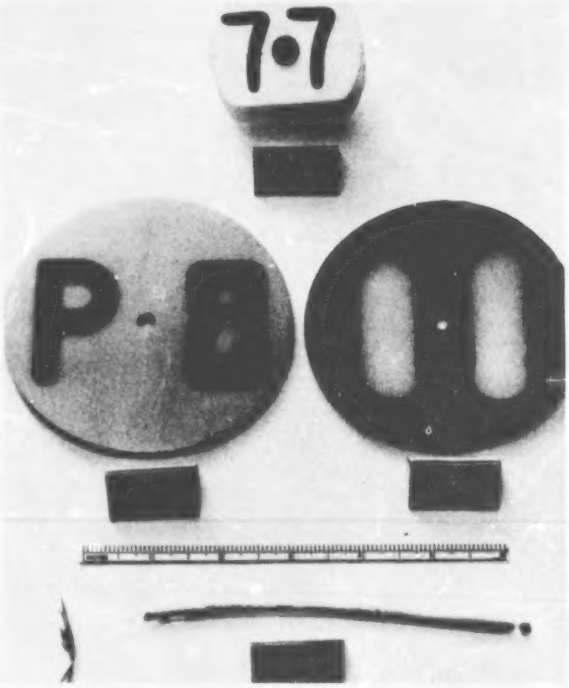
In recent years, in an attempt to overcome some of these problems, scientists have been placing markers on various species of cetaceans and monitoring their movements. The following brief summary of major methods of tagging cetaceans is provided to acquaint the reader with markers he may expect to see in the western North Atlantic.

Static Tags

Since their development in the mid-1920's, numerous Discovery marks (small stainless steel projectiles with identifying information stamped on them) have been shot into commercially valuable species by means of a shotgun. The recovery of these marks from whales subsequently killed in the whaling industry has provided valuable information on the movement patterns and on basic aspects of the growth and development of harvested species of whales. Discovery marks are limited, however, because they are not visible in a living animal. Reduction in whaling activities will bring about a significant reduction in their use.

More recent tagging developments relate to marks which will be visible on a free-swimming animal. Large whales, for instance, may be tagged with color-coded streamers, such as that shown in Appendix Figure A2. The tags, which are modified versions of the spaghetti tags first constructed for use on fishes, consist of a small stainless steel head for attachment to the blubber and a colorful streamer (sometimes stamped with information on agencies to which tags should be returned) which is visible above the surface of the animal. These tags may be applied by using either a pole applicator or a crossbow and crossbow bolts. Both applicators are equipped with a stop to limit the depth of penetration into the animal's blubber. Extensive experimentation indicates that the tags do not harm the animals and that their application is not traumatic. With the continued reduction in whaling activity, it is hoped that the use of such markers in the study of movements of big whales will be increased.

Because they often ride the bow wave of a moving vessel, thereby making themselve accessible for tagging and capture, small porpoises and dolphins have been tagged with a greater variety of marks than large whales. In recent years, at least three kinds of static tags, including spaghetti streamers, have been placed on small and medium-sized cetaceans.

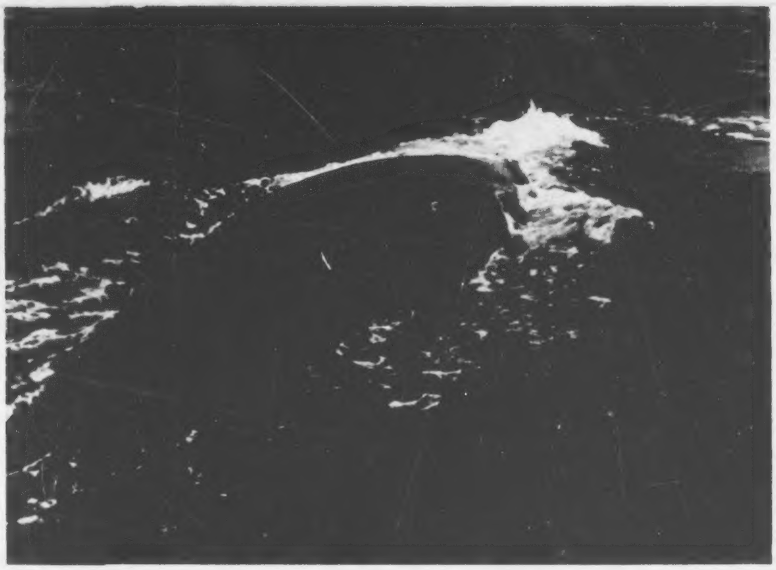


Appendix Figure A1.—Some of the basic kinds of tags used to mark porpoises, dolphins, and small whales. A, B, and C are nylon button tags, which are placed in the dorsal fin of animals and may be clearly visible as the animal surfaces to breathe. D is a vinyl spaghetti tag. ***(Photo by R. Kremic, courtesy of Naval Undersea Center.)***

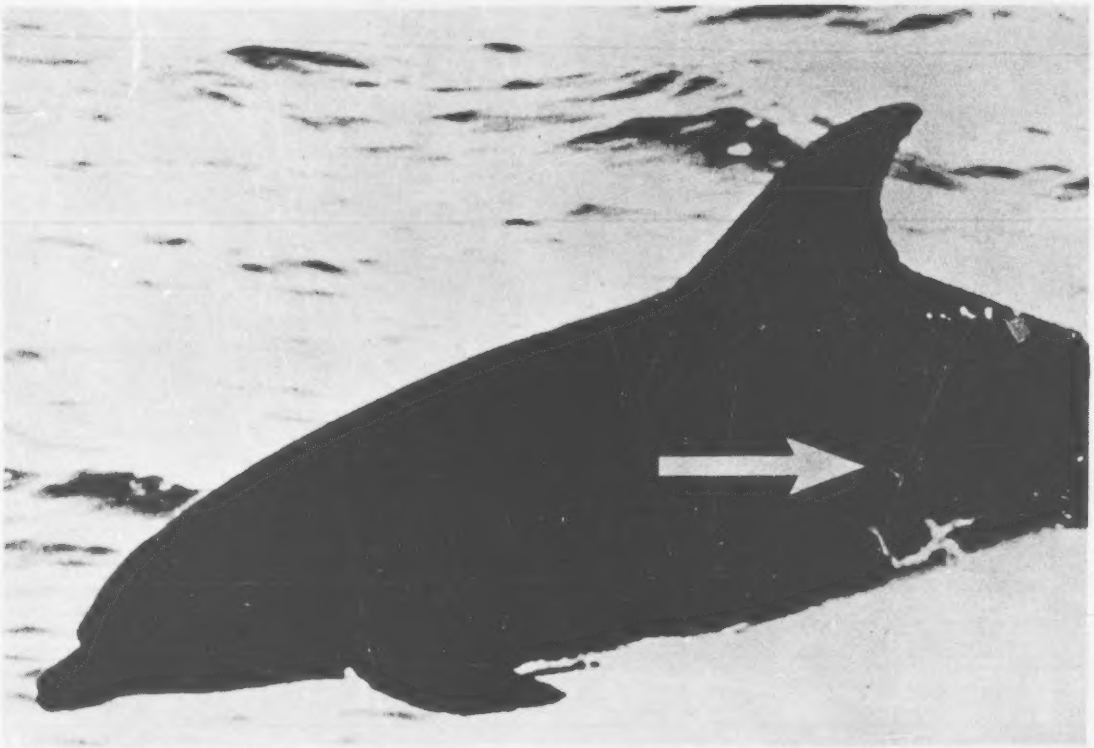
Spaghetti tags, placed in the animal's blubber near the base of the dorsal fin as it rides the bow wave, stream to conform to the contour of the animal's body as it swims (App. Fig. A3). It is not possible to identify the numbers on the spaghetti tag of a moving animal, although color codes may be used to indicate different species, populations, or tagging areas.

Button tags and freeze brands are placed on captured animals prior to their release. The button tags (App. Figs. A4, A5) are placed in the dorsal fin and should be visible as the animal surfaces to breathe or as it rides the bow wave. At close range, the number, letter, or design may also be visible. Freeze brands (App. Fig. A6) are placed on the back or dorsal fin with a supercooled branding iron, apparently without pain or discomfort to the animal, and provide a permanent mark which leaves the tagged animal free of encumbrances. The use of freeze brands shows promise and should come into more extensive use.

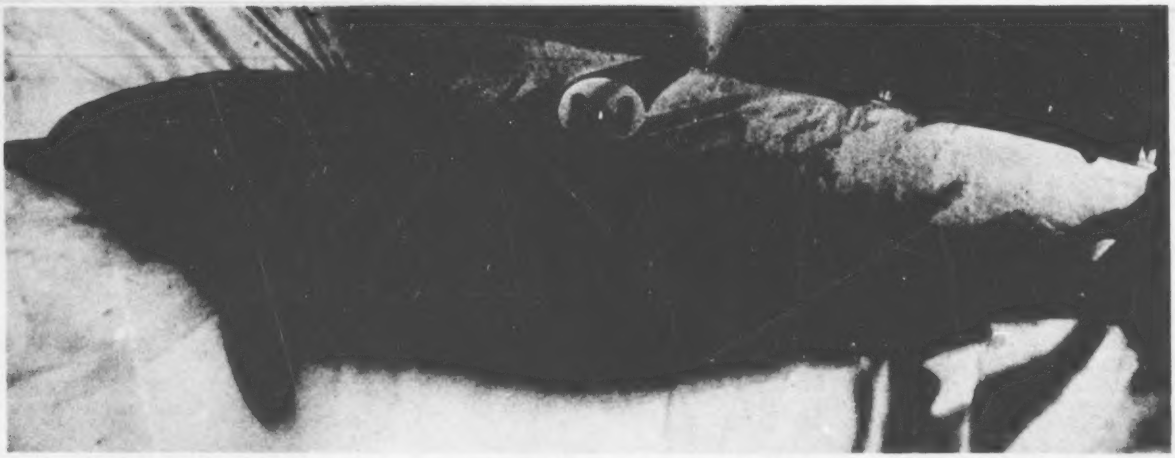
Other static tagging techniques currently under investigation include the use of laser beams to apply small



Appendix Figure A2. – A spaghetti tag in the back of a blue whale off San Clemente Island, Calif. (*Photo by S. Leatherwood.*)



Appendix Figure A3. – A spaghetti tag in the flank of a bottlenosed dolphin off Loreto, Baja California, Mexico. This particular tag was placed unusually low. The streamer and spaghetti tags are usually placed high on the back, just in front of the dorsal fin, and are clearly visible as the animal surfaces to breath. (*Photo by W. E. Evans.*)

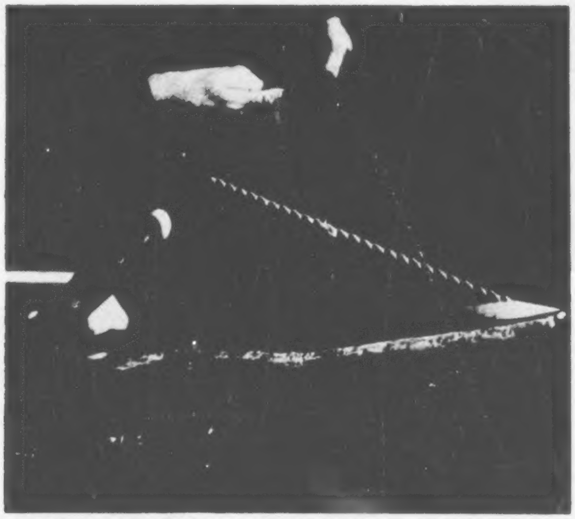


Appendix Figure A4.—A button tag placed on the dorsal fin of a newly captured saddleback dolphin off Catalina Island, Calif. (*Photo by W. E. Evans.*)

Appendix Figure A5.—This is the way the botton tag appears on an animal swimming free in the open sea off Palos Verdes, Calif. (*Photo by B. Noble, courtesy of Marineland of the Pacific.*)

brands and the use of gas branding devices. Neither technique, however, has yet reached the field biologist.

The success of any tagging program using static tags depends on the resighting of tagged animals and the recovery of tags. For that reason, we appeal to readers to be on the lookout for tagged animals and to report sightings to one of the authors.

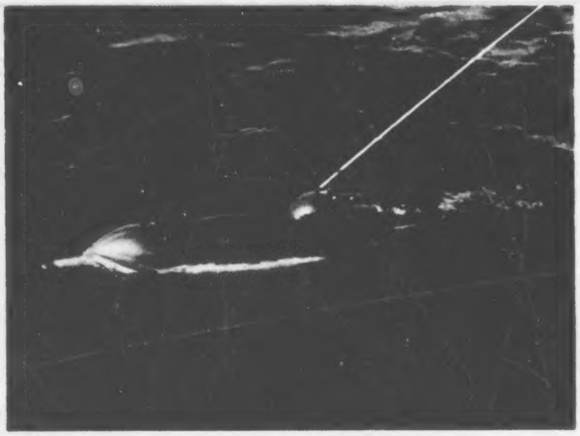


Appendix Figure A6.—Freeze-branding is an apparently painless method of applying a permanent identifying mark to the body of a porpoise or whale. (*Photo of a bottlenosed dolphin off Sarasota, Fla., by A. B. Irvine.*)

Radio Transmitter Tags

In recent years, radio transmitter tags have been developed for use on marine mammals. As they continue to become more reliable, these tags are expected to come into more and more widespread use.

Early radio tags (Fig. A7) were simple locator beacons which permitted the animal to be tracked by sending a signal to a tracking vessel or aircraft every time the animal surfaced and the antenna tip was exposed. Even these basic packages



Appendix Figure A7.—A saddleback dolphin wearing a radio tag transmitter surfaces to breathe off southern California. (*Photo courtesy of W. E. Evans.*)

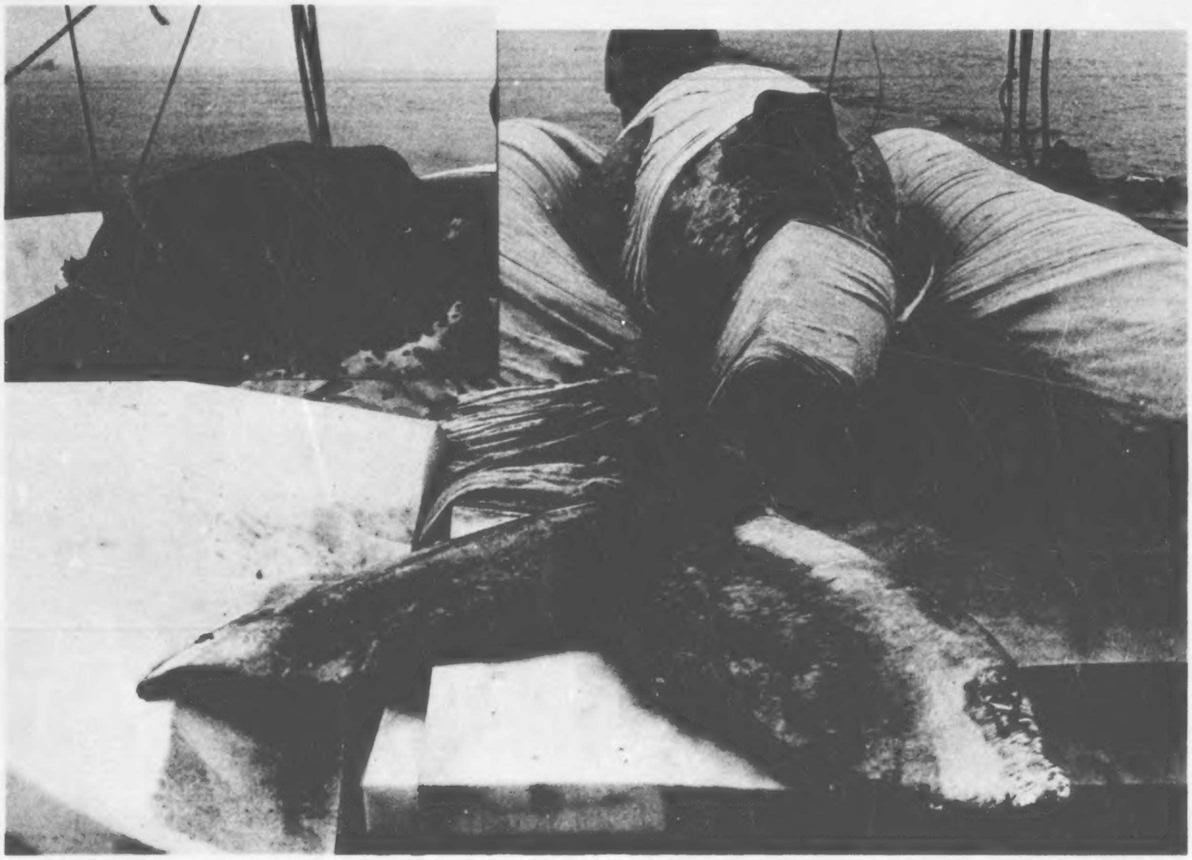
provide important information on movement, activity patterns, and respiration rates.

Subsequent developments have involved the addition of sensors to monitor the maximum depth of each dive and environmental parameters such as the water temperature at that depth (Fig. A8).

Logical extensions of these developments include the addition of numerous other sensors to permit simultaneous monitoring of multiple aspects of the animal's environment and the transmission of these data first to aircraft and subsequently to satellites for relay to shore-based laboratories.

In addition to permitting scientists to define movement patterns and daily diving patterns of cetaceans, the use of such devices offers an exciting means of determining the environmental parameters that trigger changes in their behavior.

Radio transmitter tags, in a variety of configurations, may be constructed and attached for short-term studies or for long-term monitoring of migrating animals. In either case, depending on their size and methods of attachment, radio



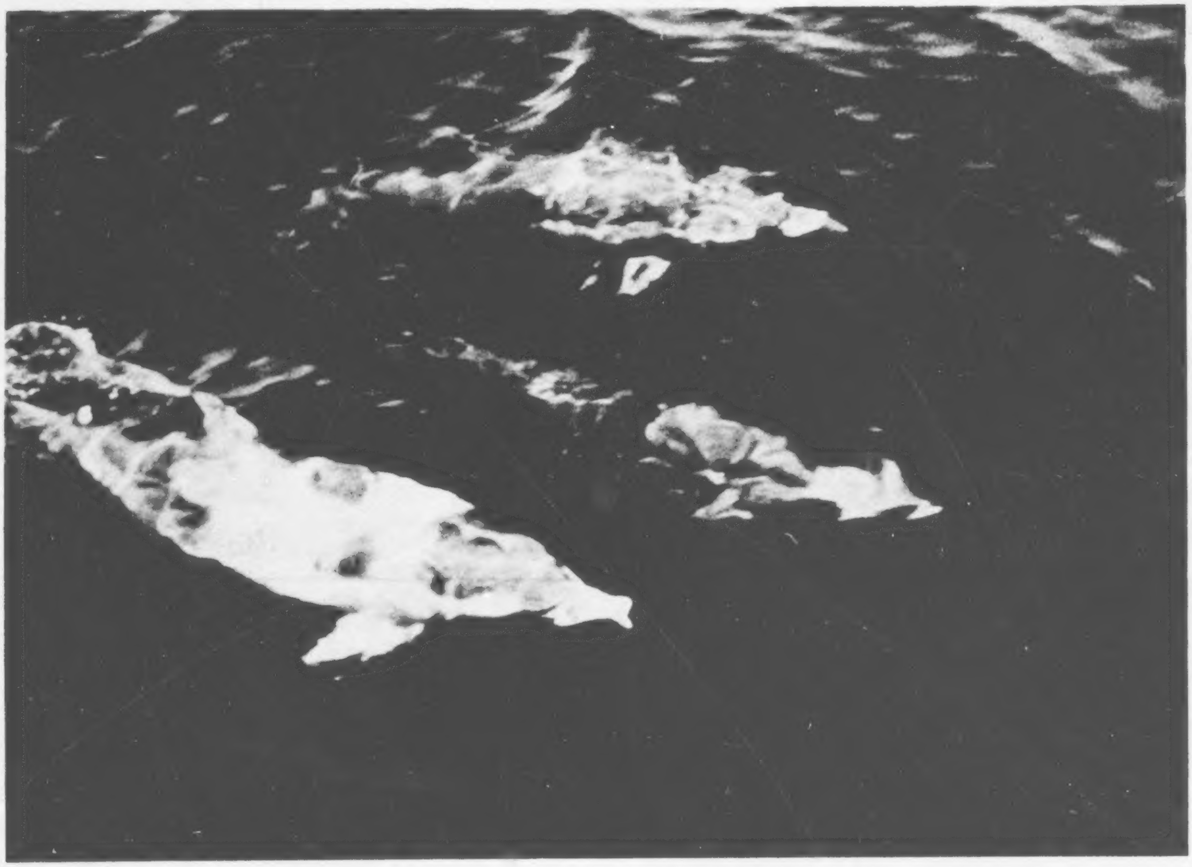
Appendix Figure A8.—A radio transmitter package attached to the dorsal ridge of a California gray whale. This yearling animal, captive for most of the first year of its life, was released into the ocean off San Diego, Calif., in March 1972 and subsequently tracked from shipboard and aircraft for over 30 days. The sensor transmitter package, shown in detail in the inset, was designed to measure the maximum depth of the animal's dive and the water temperature at that depth. (*Photo by S. Leatherwood.*)

transmitter tags may be visible on a free-swimming animal even at a considerable distance.

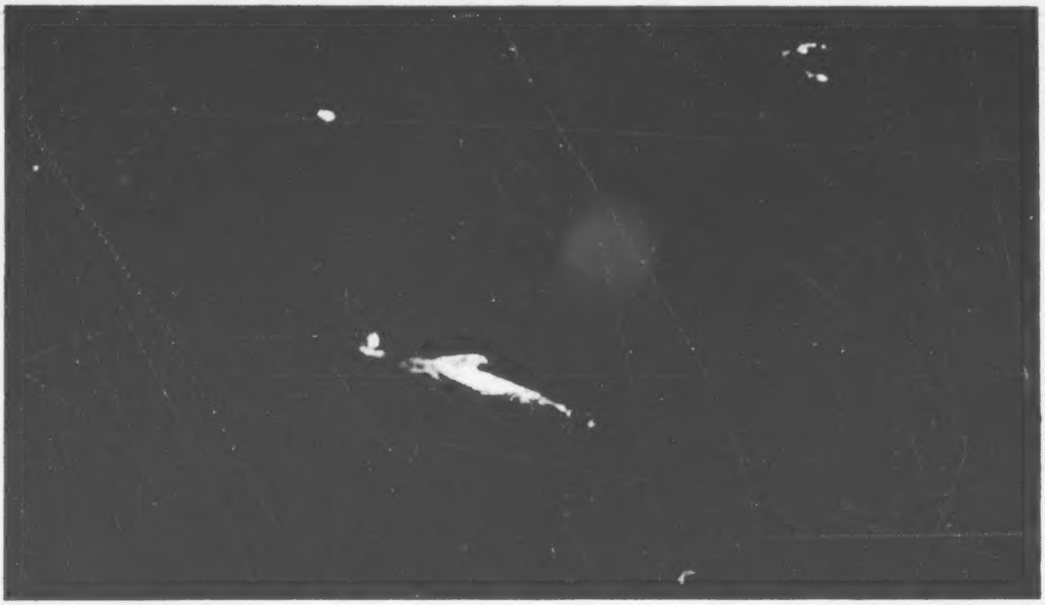
Natural Markings

In addition to these man-made and applied tags, variations in natural markings and unusual appearances may be used to identify individuals and herds on repeated encounters. Although many species of cetaceans are characterized by changes in color pattern with age, individuals occasionally differ radically in their coloration from their fellows (App. Figs. A9, A10). In addition, individuals are sometimes seen with unusually shaped dorsal fins or scarring patterns (App. Fig. A11). These usually marked animals should stand out in repeated encounters and can be a help in identifying a herd from one encounter to another.

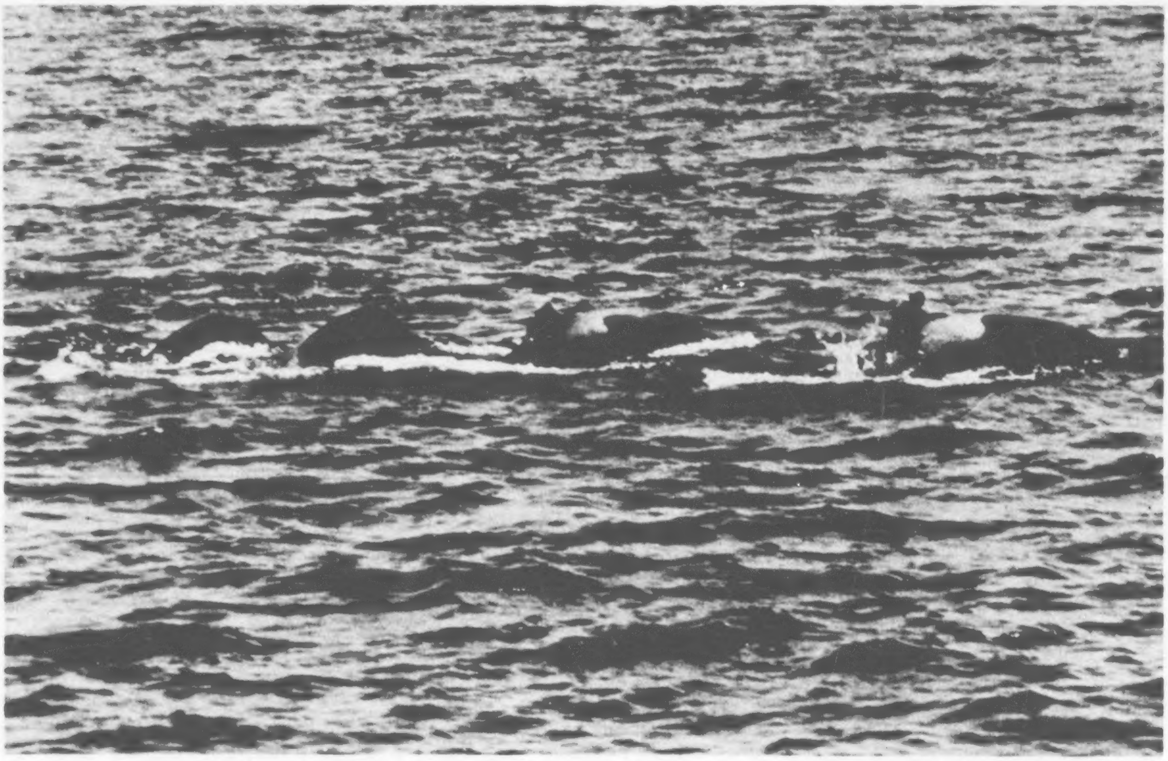
Obviously, this list of tags and anomalous markings is not exhaustive. New marks may be developed at any time. The discussion is intended to make the reader aware of the value of information on natural or man-made marks in studies of cetacean natural history. Your cooperation will perhaps help us to unravel some of the mystery surrounding the distribution and movements of porpoises, dolphins, and whales.



Appendix Figure A9.—A piebald saddleback dolphin on the bow of a research vessel off San Clemente Island, Calif. (*Photo by B. C. Parks.*)



Appendix Figure A10. — A nearly all-white pilot whale seen off Catalina Island, Calif., in April 1971. The observation of this same animal at least once each quarter of the year is evidence that it is resident in that area. (*Photo by S. Leatherwood.*)



Appendix Figure A11. — A herd of pilot whales off Catalina Island, Calif., including an animal with a partially chopped-off dorsal fin, which has made him recognizable in repeated encounters with pilot whales around the various channel islands. (*Photo by G. E. Lingle.*)

APPENDIX B

RECORDING AND REPORTING OBSERVATIONS OF CETACEANS AT SEA

To increase reliability of identifications, observers should train themselves to ask the following kinds of questions each time cetaceans are encountered:

1. How large was the animal?
2. Did it have a dorsal fin? If so, what was its size, shape, and position on the animal's back?
3. Was the animal's blow visible? If so, how tall did it appear? What was its shape? How frequently did the animal blow?
4. What was the animal's color and color pattern?
5. Did it have any highly distinctive markings?
6. If it was a large or medium-sized animal, did it show its tail flukes when it began its dive?
7. If it was a medium-sized or small animal, did it approach, avoid, or ignore the vessel? Did it ride the bow wave?
8. What was its behavior? Did it jump from the water? If so, did it make a smooth graceful arching jump, or did it spin, somersault, or reenter with a splash?

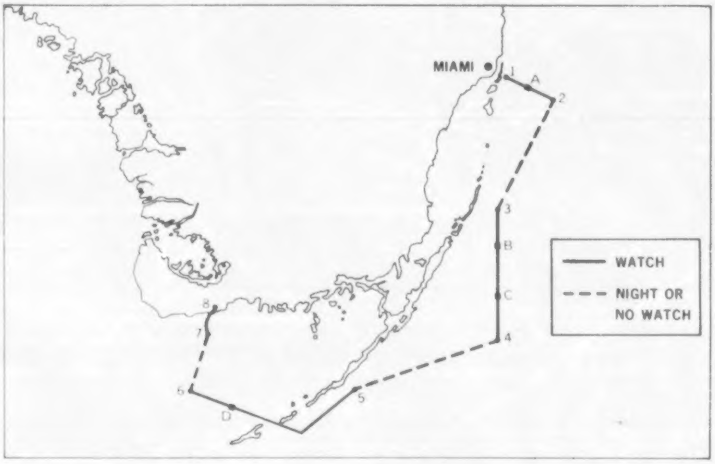
One characteristic is rarely sufficient by itself, and the greater amount of relevant evidence the observer can obtain, the greater the likelihood he can make a reliable identification. But it is important to remember that even the most experienced cetologists are often unable to make an identification. Therefore, even if you cannot positively identify an animal or even make a good guess as to its identity, do not hesitate to fill out the rest of the sighting record form and submit it to an appropriate office. Listing the characters you observe and filling in as much of the form as possible may enable a cetologist to make an identification based on those characters and his knowledge of the distribution, movements, and behavior of cetaceans. In this regard, a sketch made as soon as possible after the encounter and photographs taken from as many angles as possible will aid in the identification.

Two sample sighting reports are provided to demonstrate a method of recording observations. The first report, "Sighting Information," is completed as an example and is footnoted for explanation. The second report, "Cetacean Data Record," located at the end of the guide, is blank and may be photocopied in bulk for use in the field. Copies of this or similar forms are available from any of the authors or from National Marine Fisheries Service, Tiburon, Calif. Even if no form is available, however, observations should be recorded in rough form, in as much detail as possible.

Reliable intermittent reports of cetaceans are of interest to cetologists. Their locations indicate seasonality of distribution, and their frequencies help indicate relative abundances of the various species. Because scientists are attempting to determine areas in which cetaceans are often, occasionally, seldom, or never found, and are ultimately describing why animals are found in one area and not another, persons who want to go a step further in their participation in observer programs may want to keep and report records of their entire cruise tracks and zones in which vigilance was maintained but no cetaceans were observed. Data obtained in this manner may be used as the foundation of estimates of cetacean populations, estimates which are extremely difficult to obtain by any other method.

To be of maximum use in such calculations, however, records of this kind *must* include the following minimum information: time and location of beginning and ending of each continuous watch, weather conditions as they affect visibility, sea state, ship's speed, height of the observer(s) above the water, number of persons on watch, and details of each sighting, particularly the estimated distance of the animal(s) from the ship's track.

For a sample of a fictional continuous watch report might look like the following. If sighting forms are available, these observations may be recorded directly onto them. Additional information can be recorded on the opposite side of the forms.



Appendix Figure B1.—A sample cruise track with cetacean sightings. See text for detailed data recording.

GENERAL INFORMATION

RV Melville (34-foot converted fishing boat)
U.S. Department of Commerce
NMFS

Hydrographic Cruise Miami, Florida to Flamingo, Florida

28-31 January 1973

2 observers (G.E. Lingle and G.M. Mohr)

Eye level of observers: 16 feet above water

Average ship speed: 8.0 knots during continuous watch

Continuous watch information (refer to Fig. B1):

Leg	Date	Start time	End time	Start position	End position	Weather— Visibility
1-2	2/28	1200	1730	U. Miami Dock Va. Key	25—42N 80—02W	Beaufort II Visibility 3 miles
3-4	2/29	0800	1500	24—26N 80—04E	25—00N 81—04W	Beaufort I Visibility 3.5 miles
5-6	2/30	0700	1630	25—12N 80—46W	25—12N 81—10W	3.5 miles
7-8	2/31	0700	0900	25—00 80—45W	Flamingo	3.5 miles

Cetacean observations (refer to Fig. B1):

A - 2/28 1048	16 bottlenosed dolphins, *Tursiops truncatus*. 6 miles outside our course, headed west—rode bow briefly. Large concentrations of sea birds in area. One porpoise freeze branded N-1 on dorsal fin.
B - 2/29 1100	2 right whales directly ahead of vessle headed NE—40-foot female? with calf. 2 bottlenosed dolphins accompanying the whales were riding pressure wave off whale's head.
C - 2/29 1400	25-30 spotted porpoises, *Stenella plagiodon*, 1.25 miles outside our course, heading 240° mag. Did not ride bow wave.
D - 2/30 1300	8 bottlenosed dolphins, *Tursiops truncatus*, 200-300 yards inshore of our course, milling in area of concentrations of mullet and other small schooling fishes, dolphins (porpoises) and birds feeding on fish.

SIGHTING INFORMATION

DATE AND LOCAL TIME 27 January 1977 0845 LOCATION[1] ca. 25°00'N, 80°30'W

WEATHER CONDITIONS Scattered rain squalls, visibility 1-1.5mi, Temp 42°

OCEANOGRAPHIC CONDITIONS[2] Swells 1-2 feet, scattered white caps Winds from S.E. @ 3-8 knots, gusting in squalls to 15 knot

SPECIES[3] Right Whales, Eubalaena glacialis (45ft/15ft) NUMBER OF ANIMAL(S) 2

HEADING OF ANIMAL(S) (MAGNETIC) 015° SPEED OF ANIMAL(S) (KNOTS) 1-2

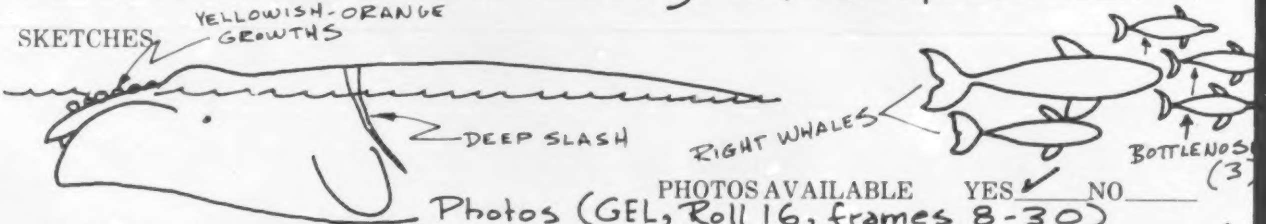
ASSOCIATED ORGANISMS[4] Bottlenosed dolphins, Tursiops truncatus (3) and unidentified gulls (10-20)

TAGS OR UNUSUAL MARKINGS One whale had deep slash across back abou 3ft. behind blowholes - area of slash was white.

CHARACTERISTICS OBSERVED WHICH RESULTED IN SPECIES IDENTIFICATION 45 ft, No dorsal fin, smooth black back, high arching jaws, yellowish-orange growths on head, coastal habitat

BEHAVIOR OF ANIMAL(S) Adult whale swam steadily north, calf close beside, Bottlenosed dolphins riding in front of adults head.

SKETCHES



PHOTOS AVAILABLE YES ✓ NO

Photos (GEL, Roll 16, frames 8-30)

ADDITIONAL REMARKS Dolphins remained with whales entire ½ hour of observation, appently riding on pressure wave.

NAME AND ADDRESS OF OBSERVER (SHIP OR A/C) G.E. Lingle, Naval Undersea Center, San Diego, California 92132 and G.A. Antonelis, NMFS, Seattle, Washington 98105 aboard the RV Cape

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[1] If latitude and longitude are not readily available, record best available position, for example 5 hours at 10 knots, SE of Miami.

[2] Any oceanographic or bathymetric information obtainable at the time of sighting may be significant. Such measurements as water depth, presence of large fish schools, or deep scattering layer/organisms (DSL) characteristics of the bottom (e.g., flat sand plain, sea mount, submarine cliff), surface temperature, depth of thermocline, and salinity should be included if available. In the Pacific, similar data have been used to demonstrate reliable associations there between saddle back dolphins and significant features of bottom relief and relationships between the onset of their nighttime deep diving (feeding) patterns and the upward migration of the scattering layers.

[3] Sometimes two or more species of cetacean are found together. If more than one species is sighted, try to identify each. Give both common and scientific names of each, and even if you cannot identify the animal(s) describe, sketch, and, if possible, photograph them and fill out the rest of the sighting report.

[4] Describe any tags seen (see Appendix A) and state their size, shape, color, and position on the animal's body and any symbols or numbers they contain.

APPENDIX C

STRANDED WHALES, DOLPHINS, AND PORPOISES

With a Key to the Identification of Stranded Cetaceans of the Western North Atlantic

Stranded Animals

As we discussed briefly in the introduction to this guide, whales, dolphins, and porpoises sometimes "strand" or "beach" themselves, individually or in entire herds, for a complex of still incompletely understood reasons. Though the reasons suggested for these strandings appear almost as numerous as the strandings themselves, two tenable generalizations have recently been proposed.

Strandings of lone individuals usually involve an animal which is sick or injured. Mass strandings, involving from several to several hundred individuals, appear to be far more complex and may result from fear reactions, from extremely bad weather conditions, from herd-wide disease conditions, or from failure of the echolocation system due to physiological problems or environmental conditions which combine to reduce its effectiveness, to mention only a few.

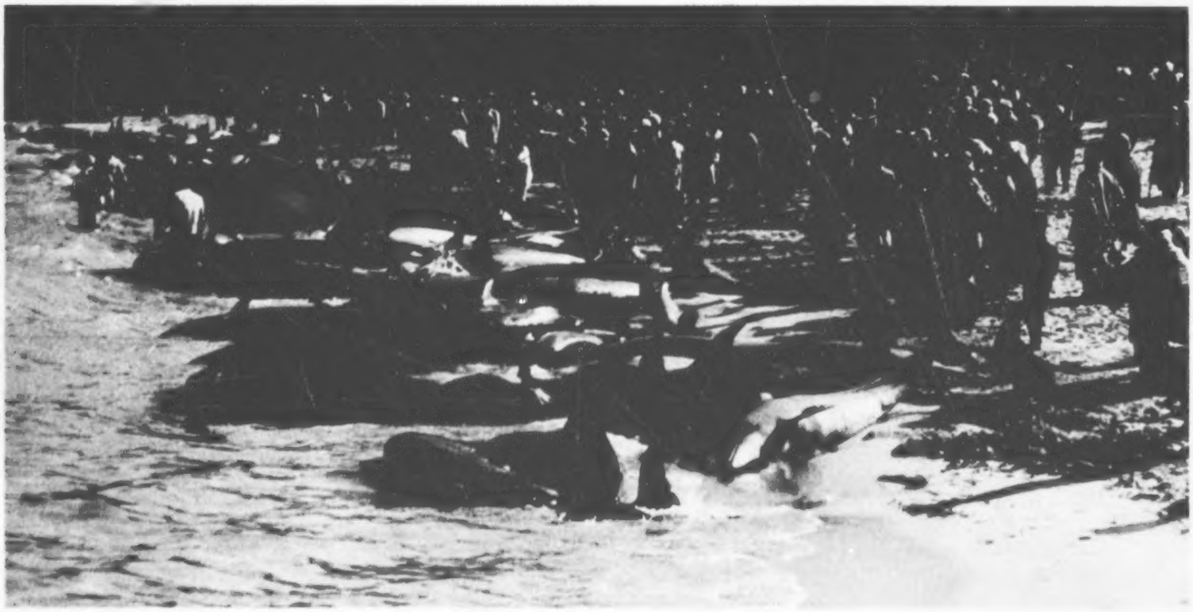
Whatever their causes, however, cetacean strandings usually attract crowds and elicit much public interest and sympathy. There are frequently attempts to save the lives of the animals involved.

Individually stranded cetaceans rarely survive, even if they are found soon after stranding and transported to adequate holding facilities. This does not mean that every attempt should not be made to save them.

In mass strandings, some individuals may be entirely healthy, and if they are found soon enough after stranding, properly protected and transported, and correctly cared for in the initial few days after collection, they may survive in captivity. Attempts to rescue all the animals in a mass stranding by towing them out to sea have almost always been frustrating because the animals usually swim repeatedly back onto the beach.

If you discover a stranding and before you become involved in an attempt to save a live stranded animal or to collect data from a dead one, you should be aware of the following:

Marine mammals are currently protected by law. Under provisions of the Marine Mammal Protection Act of 1972, it is unlawful for persons without a permit to handle, harass, or possess any marine mammal. It is within the authority of State officials and employees of the National Marine Fisheries Service to arrange for the care of live animals through certified institutions, such as many of those listed in Appendix E. (Even if the animals were not protected by law, any impulse to take them to backyard swimming pools, for instance, should be tempered by the knowledge that their chances of survival are far greater in an institution with the facilities and expertise to properly care for them.) The best general rule is to notify the nearest State or National Marine Fisheries Service office. If you prefer, however, you may



Appendix Figure C1.—Whales and dolphins, like this mixed school of false killer whales and bottlenosed dolphins, sometimes strand themselves individually or as entire herds for a complex of still incompletely understood reasons. (*Photo from Japan by S. Ohsumi.*)

contact one of the institutions listed in the appendix and ask them to handle the situation. Some will already have permits to investigate strandings. Most will be anxious to help.

Although **you cannot remove the animal from the beach without a permit**, you can help keep it alive until it can be removed. Here are a few hints. **While waiting for help to arrive, endeavor to keep the animal as comfortable as possible. If it is not too large and surf conditions permit, it should be removed to shallow water where it is barely afloat.** The buoyancy of the water will reduce the stress to the animal and will help to keep it cool and prevent overheating—a real danger to stranded cetaceans.

Whether or not the animal can be floated, **care should be taken to protect it from sunburn, drying out, and overheating. If it is afloat, exposed parts should be frequently splashed down. If it is high and dry, it should be covered with damp cloth, particularly on the dorsal fin, flippers, and flukes, and the body and the terrain should be frequently watered to prevent the animal from overheating in the areas in contact with the sand or rock.**

In any case, be careful to leave the blowhole free so that the animal can breathe. Note also that the eyes are particularly sensitive and susceptible to injury; they should be covered with a wet cloth and treated with special care.

With luck, this careful handling will be rewarded with the animal's being picked up and transported to an aquarium, where it can receive proper attention. But even **if the animal cannot be saved, collection and examination of the carcass can provide valuable information to scientists working on the biology of cetaceans, or on such problems as their disease conditions and the effects of environmental pollutants on them. Dead stranded cetaceans even in advanced stages of decomposition are also an important source of materials for museum study and display. Therefore, every attempt should be made to get the carcass into the best hands. Dead cetaceans, like the live ones, are protected by law and may not be removed without a permit.** The procedure for obtaining permission to collect them is the same as that outlined for live strandings. The majority of the institutions along the western North Atlantic coast will respond to calls about live or dead strandings. Even if you are unable to contact an appropriate official, you can still collect some valuable information by identifying the specimen, using the following key, and by collecting measurements (see Appendix D).

Identifying the Animal

Cetaceans may be found during or shortly after the stranding or many months later, when the carcass is bloated or rotted nearly beyond recognition. If the stranded animal is alive or freshly dead, it can be identified by any of the characteristics itemized in the text. But even if it is in an advanced stage of decomposition it can be identified using the key below. In general numbers and descriptions of teeth (Table 1) and numbers and descriptions of baleen plates (Table 2) persist longest as reliable identifying characteristics. If they are still detectable on the carcass, numbers and lengths of ventral grooves may also be used to separate the balaenopterine whales.[1]

In order to use the key below, begin with the first pair of opposing characteristics—one of the two will apply to the specimen you are examining. On the line following that statement there will be a paragraph number, go to that paragraph. There you will find two more paired, opposing characteristics. Again, one of the two will apply to the specimen you are examining. Select that one and go to the paragraph indicated on the line following it. Continue this procedure until the statement which is true for your specimen is followed by a species name instead of a reference to another paragraph. This name identifies the specimen. To verify your identification go to the discussion of that species in the text. With a little practice and careful attention to details, identification of whales, dolphins, and porpoises will become easier.

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[1] The tables were prepared primarily from Tomilin (1967) and supplemented by miscellaneous published papers and our own observations. The sections on toothed whales in the key were developed following the general outline of Moore (1953).

KEY TO THE IDENTIFICATION OF STRANDED CETACEANS OF THE WESTERN NORTH ATLANTIC

1. a. Double blowhole; no teeth present in either jaw; baleen plates in upper jaws. (Baleen whale) .... Go to 2

b. Single blowhole; teeth present (sometimes concealed beneath the gums); no baleen plates in upper jaw. (Toothed whale) .... Go to 9

2. a. Ventral grooves present; dorsal fin present; viewed in profile, upper jaw relatively flat and broad. (Balaenopterine whale) .... Go to 3

b. Ventral grooves absent; dorsal fin absent; viewed in profile, upper jaw and lower lips strongly arched; upper jaw very narrow. (Right whale) .... Go to 8

3. a. Ventral grooves end before navel.[2] .... Go to 4

b. Ventral grooves extend to or beyond navel. .... Go to 5

---

[2] Counts of ventral grooves are made between the flippers and do not include shorter grooves often found on the side of the head and on the side above the flippers.

4. a. 50-70 ventral grooves, longest often ending between flippers; baleen less than 8 inches (20.3 cm), mostly white or yellowish white (some posterior plates may be dark) with 15-25 white bristles per centimeter; 300-325 plates per side.

Minke whale, p. 63

b. 38-56 ventral grooves, longest ending well short of navel; baleen less than 31 inches (78.7 cm), black (some anteriormost plates may be white) and with 35-60 fine silky white bristles per centimeter; 318-340 plates per side.

Sei whale, p. 32

5. a. Flippers one-fourth to one-third length of the body length and knobbed on leading edge; less than 22 broad and conspicuous ventral grooves, longest extending at least to navel; head covered with numerous knobs; baleen less than 24 inches (61 cm), ash black to olive brown (sometimes whitish) with 10-35 grayish white bristles per centimeter; 270-400 plates per side.

Humpback whale, p. 40

b. Flippers less than one-fifth body length; no knobs; from 40 to 100 fine ventral grooves, longest extending at least to navel; head lacks knobs .... Go to 6

6. a. Three ridges on head, one from blowholes, forward towards tip of snout, one auxiliary groove along each side of main ridge; 40-50 ventral grooves; 250-300 slate-gray baleen plates with 15-35 dirty gray bristles per centimeter.

Bryde's whale, p. 37

b. Only one prominent ridge on head,[3] from just in front of blowholes forward towards tip of snout; 55-100 ventral grooves .... Go to 7

7. a. Head broad and U-shaped; dorsal fin less than 13 inches (33 cm) and very far back on tail stock; baleen all black with 10-30 black bristles per centimeter; plates extremely broad relative to length.

Blue whale, p. 19

b. Head broad at gape but sharply pointed on tip; dorsal fin to 24 inches (61 cm) and slightly more than one-third forward from tail; right front one-fifth to one-third of baleen ivory white to yellowish white, remainder dark gray to bluish gray streaked with yellowish white; plates have 10-35 gray or white bristles per centimeter and are narrow relative to length.

Fin whale, p. 26

8. a. Top of snout not covered with callosities; 325-360 baleen plates per side, longest reaching 14 feet (4.3 m); plates black with black bristles (anterior portion of some plates may be whitish).

Bowhead whale, p. 49

b. Top of snout covered with callosities, often including lice and/or barnacles; 250-390 baleen plates per side, longest reaching 7.2 feet (2.2 m); plates dirty or yellowish gray (some anterior plates all or part white and some posterior plates brown or black) with 35-70 bristles per centimeter.

Right whale, p. 52

9. a. Upper part of head extending appreciably past tip of lower jaw; lower jaw markedly undershot and considerably narrower than upper jaw .... Go to 10

b. Upper part of head not extending appreciably past tip of lower jaw; lower jaw approximately same width as upper jaw .... Go to 12

10. a. Body more than 13 feet (4.0 m); head massive, to one-third of body length; blowhole located far forward of eyes and to left front of head; dorsal fin low, triangular or rounded followed by series of knuckles or crenulations; 18-25 teeth in each lower jaw fit into sockets in upper jaw (10-16 upper teeth rarely emerge).

Sperm whale, p. 57

b. Body less than 13 feet (4.0 m); head considerably less than one-third body length; blowhole located approximately even with eyes on top of head, slightly displaced to left but not on left front of head; conspicuous dorsal fin present; 8-16 teeth in each lower jaw fitting into sockets in upper jaw. .... Go to 11

11. a. No creases on throat; dorsal fin small and located in latter third of back; 12-16 teeth (rarely 10-11) in each lower jaw.

Pygmy sperm whale, p. 144

b. Inconspicuous creases on throat; dorsal fin tall and falcate, resembling that of the Atlantic bottle-nosed dolphin, and located near middle of back; 8-11 (rarely 13) extremely sharp teeth in each lower jaw; rarely 1-3 teeth in each upper jaw.

Dwarf sperm whale, p. 148

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[3] Blue whale has faint lateral ridges.

12. a. Two conspicuous grooves on outer surface of throat forming V-shape pointed forward; notch absent or inconspicuous in flukes. (Beaked whale) . . . . Go to 13

b. No conspicuous grooves on outer surface of throat; deep median notch on rear margin of tail flukes . . . . Go to 18

13. a. A pair of teeth located at the tip of the lower jaw (erupted only in adult males, concealed in females and immature animals) . . . . Go to 14

b. No teeth at the tip of the lower jaw . . . . Go to 16

NOTE: Immature individuals of the species covered in paragraphs 14 and 15 may not be readily identifiable without museum preparation and examination.

14. a. Two well-developed teeth, erupted or hidden beneath the gum, are compressed so they appear elliptical in cross section; body to 16 feet (4.9 m); united portion of the lower jaws[4] more than one-fourth the length of the entire lower jaw.

True's beaked whale, p. 77

b. Two well-developed teeth substantially less flattened so that they appear more nearly rounded in cross section . . . . Go to 15

15. a. Distinct elongated beak; pronounced bulge to forehead; blowhole located in lateral crease behind bulge; body to 32 feet (9.8 m); sometimes second pair of teeth behind first in lower jaw.

Northern bottlenosed whale, p. 67

b. No distinct beak; forehead slightly concave in front of blowhole, increasing in concavity with increasing size; body to 23 feet (7.0 m); united portion of lower jaw less than one-fourth the length of the entire lower jaw; head of adult males all white.

Goosebeaked whale, p. 70

16. a. A single pair of teeth in the united portion of the lower jaw, at the suture of the mandible (about one-third of the way from the tip of the snout to the gape); length to 22 feet (6.7 m); flukes less than one-fifth the body length.

Antillean beaked whale, p. 78

b. A single pair of teeth back of united portion of lower jaw; body less than 17 feet (5.2 m) . . . . Go to 17

17. a. Teeth not exceptionally large and located immediately back of united portion of lower jaw, about half way from the tip of the snout to the gape.

North Sea beaked whale, p. 82

b. Teeth exceptionally large, located on bony prominences near the corner of the mouth, and oriented backwards; corners of mouth, particularly in adult males, have high-arching contour; flukes to one-sixth or one-fifth of the body length.

Dense-beaked whale, p. 80

18. a. Rostrum, if present, not sharply demarcated from forehead . . . . Go to 19

b. Head has a distinct, though sometimes short rostrum separated from the forehead by a distinct crease angle . . . Go to 30

19. a. Teeth spade-shaped, laterally compressed and relatively small; body to only about 5 feet (1.5 m); 22-28 teeth in each upper and lower jaw.

Harbor porpoise, p. 150

b. Teeth conical and sharply pointed (in cross section circular, or slightly flattened anteroposteriorly . . . . Go to 20

20. a. No distinct dorsal fin; back marked instead with small dorsal ridge near midpoint of back . . . . Go to 21

b. Distinct dorsal fin, in middle or forward third of the back. . . . . Go to 22

21. a. 8-11 teeth in each upper jaw, 8-9 in each lower jaw; body of young slate gray or brownish, adults white; short broad rostrum.

Beluga, p. 99

b. No visible teeth (or two teeth) in upper jaw of adults only; in males and sometimes females one or both of these may grow up to 9-foot (2.7-m) tusk in left-hand (sinestral) spiral; no rostrum.

Narwhal, p. 102

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[4] By feeling between the lower jaws on the ventral surface and moving the finger forward towards the tip of the snout, one can feet the point at which the two lower jaws become united (called the symphysis). This location is an important reference point in distinguishing among the species separated in paragraphs 14, 15, and 16.

22. a. Head long and conical .... Go to 23
b. Head blunt .... Go to 24

23. a. 20-27 teeth in each upper and lower jaw; crowns of teeth often marked with many fine vertical wrinkles; body to about 8 feet (2.4 m).
Rough-toothed dolphin, p. 135
b. 26-35 teeth in each upper and lower jaw; teeth smooth; body to about 5.6 feet (1.7 m); distribution restricted to northern coast of South America, in the Guianas, and adjacent eastward territory of Venezuela.
Guiana dolphin, p. 132

24. a. Teeth usually at front end of lower jaw only, 2-7 pairs (rarely teeth in upper jaw); all teeth may have fallen out of the lower jaw of older specimens or may be extensively worn; forehead with median crease; dorsal fin tall and distinct to 15 inches (38.1 cm); body to 13 feet (4.0 m).
Grampus, p. 96
b. Teeth in both upper and lower jaws, 7 or more pairs, forehead with no median crease .... Go to 25

25. a. Flippers large and paddle-shaped, ovate, and rounded on the distal end; dorsal fin tall and erect to 6 feet (1.8 m) in males and 3 feet (0.9 m) in females; 10-12 teeth in each jaw; teeth to 1 inch (2.5 cm) in diameter.
Killer whale, p. 84
b. Flippers long and pointed .... Go to 26

26. a. Dorsal fin located in forward one-third of body, very broad at the base; head bulbous.
(Pilot whale) .... Go to 27
b. Dorsal fin located near midpoint of back; head long .... Go to 28

27. a. Flippers one-fifth of body length, or more.
Atlantic pilot whale, p. 91
b. Flippers one-sixth of body length, or less.
Short-finned pilot whale, p. 94

28. a. Flipper has distinctive hump on forward margin; 8-11 prominent teeth curved backwards and inwards, in each upper and lower jaw.
False killer whale, p. 88
b. Flipper lacks distinctive hump on forward margin; 10-25 teeth in each upper and lower jaw .... Go to 29

29. a. 8-13 teeth in each jaw.
Pygmy killer whale, p. 138
b. 20-25 teeth in each upper jaw, 21-24 teeth in each lower jaw.
Many-toothed blackfish, p. 142

30. a. Beak short, usually less than about 1 inch (2.5 cm) .... Go to 31
b. Beak more than 1 inch (2.5 cm) .... Go to 33

31. a. Flippers very short; dorsal fin small and triangular; 38-44 teeth in each jaw; body to at least 8 feet (2.4 m); distinct black stripe from beak to area of anus; in profile beak shows very little separation from forehead.
Fraser's dolphin, p. 120
b. Flippers long relative to body length; dorsal fin tall and distinctly falcate; 22-40 teeth in each jaw; in profile, beak shows distinct separation from forehead. (*Lagenorhynchus* sp.) .... Go to 32

32. a. 22-28 teeth in each jaw; dorsal fin all black; body to about 10 feet (3.1 m).
White-beaked dolphin, p. 126
b. 30-40 teeth in each jaw (some animals have greater number in upper than in lower jaw); dorsal fin part gray, part black; body to about 9 feet (2.7 m).
Atlantic white-sided dolphin, p. 123

33. a. 20-26 teeth in the upper jaws; 18-24 in the lower jaws; body to 12 feet (3.7 m); teeth may be extensively worn.
Atlantic bottlenosed dolphin, p. 128
b. 26 or more teeth in both upper and lower jaws .... Go to 34

34. a. 29-36 teeth in each upper jaw; 28-36 in each lower jaw.
(Spotted dolphins) .... Go to 35

b. More than 40 teeth in each upper and lower jaw .... Go to 36

NOTE: Characters in paragraph 35 are usable only on fresh specimens. Spotted dolphins in advanced stages of decomposition can be distinguished only with museum preparation and examination.

35. a. Bridle present (dark lines from eye to rostrum and from flippers to corner of mouth); cape on head distinct; no spinal blaze.
Bridled dolphin, p. 108

b. Bridle absent though there is a light line from the flipper to the eye; cape indistinct; spinal blaze.
Atlantic spotted dolphin, p. 104

36. a. From 46-65 small, sharply pointed teeth; body dark gray on back, tan to light gray on sides, white on belly; beak dark gray or black above, white below, and often black-tipped; body to about 7 feet (2.1 m).
Spinner dolphin, p. 110

b. From 40 to 50 teeth in each upper and lower jaw .... Go to 37

37. a. Body to 9 feet (2.7 m); black to dark gray on back, gray on sides, white on belly; distinctive black stripes from eye to anus, eye to flipper, and dark dorsal coloration to side above flipper.
Striped dolphin, p. 113

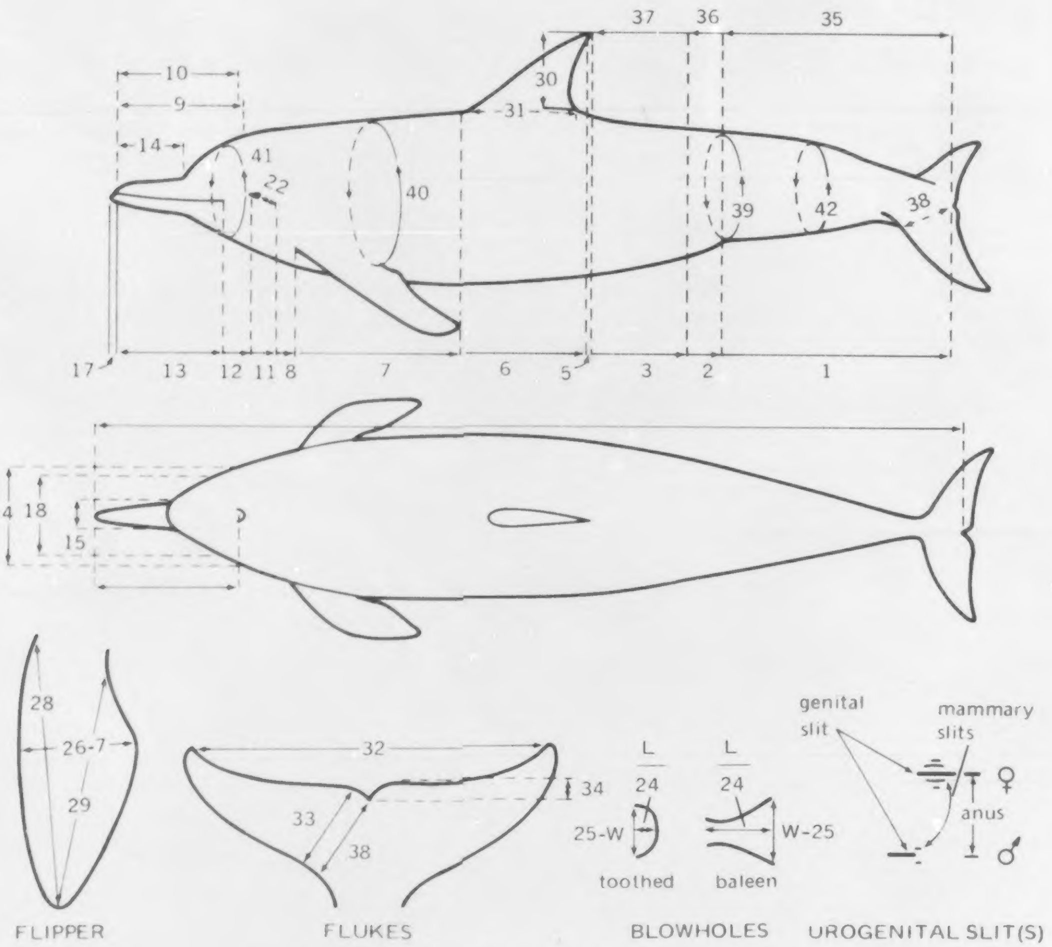
b. Body to 8.5 feet (2.6 m) but usually less than 7.5 feet (2.3 m); body dark on back with light thoracic patch and crisscross or hourglass pattern on side; black stripe from middle of lower jaw to origin of flipper.
Saddleback dolphin, p. 116

APPENDIX D

RECORDING AND REPORTING DATA ON STRANDED CETACEANS

So that measurements of cetaceans taken at different times and at widely divergent locations can be compared, the measurements and the methods of taking them have been standardized, although there is still some disagreement about which of the measurements are most important. The data form located at the end of this guide, usable on both baleen and toothed whales, includes all the measurements routinely taken by cetologists plus a few new ones the authors consider important. The form and the directions for taking measurements are synthesized from those currently in use by the Naval Undersea Center, San Diego; the Fisheries Research Board of Canada; the University of Rhode Island; the University of Florida; the U.S. National Museum, Washington, D.C.; and the National Marine Fisheries Service, La Jolla, Calif.

Data on stranded cetaceans should be collected by someone experienced in handling and measuring cetaceans. The legal problems associated with collection of a specimen are discussed in Appendix C. In addition to having a permit or knowing how to obtain permission to collect the specimen, persons active in cetacean research will usually have access to laboratory facilities where in-depth studies, including postmortem examinations and collection of tissues for specialized laboratory examinations, can be conducted. Furthermore, specialized equipment, and the number of steps required to do a complete job with the specimen, make the procedure prohibitive for most noncetologists. Diligent attempts should be made to contact one of the institutions listed in Appendix E. If no one is available and no permit or approval is obtainable, you are limited to photographing,



Appendix Figure D1.—Locations and details of important measurements.

sketching, and measuring the specimen without removing the carcass or any part of the carcass from the beach.

Any person taking data on stranded cetaceans should follow the instructions itemized below, being careful to take measurements in the manner prescribed and to record data in as much detail as possible.

1. Specimens should be preserved in 10% neutral Formalin, except for the stomach contents, which should be kept in 70% ethyl or 40% isopropyl alcohol, or be frozen. Commercial rubbing alcohol will suffice. As a minimum, the head, flippers, and reproductive tract should be preserved. If no other method of handling the specimen is available, and only as a last resort, it may be buried in the sand well above the high tide line and carefully marked so it can later be recovered. Burying usually results in the loss of some vital parts.

2. The carcass should be examined for external parasites particularly in such areas as the blowhole(s), the eyes, any wounds on the trailing edges of the dorsal fin, flippers, and flukes. Occasionally barnacles will be found on teeth or baleen plates. Like the stomach contents, parasites should be preserved in alcohol.

3. Photographs and sketches are a valuable part of data collection—views of the animal(s) from as many angles as possible, and detailed shots of such features as baleen plates, mouth and teeth, ventral grooves, flippers, flukes, and unusual scars or coloration should be included. Including a ruler for size reference may be helpful.

4. Although scientific data are usually expressed in metric units, measurements should be taken in whatever units are readily available. All measurements should be taken in a straight line, as shown in the diagram, unless otherwise noted. Measurements which refer to the rostrum are taken from the tip of the upper jaw. The external auditory meatus (ear) is a small inconspicuous opening located just below and behind the eye. To locate the ear the observer must sometimes scrape away some of the skin to expose the unpigmented ear canal beneath it.

5. Throat grooves are short grooves found on the throat of beaked whales, sperm whales, and dwarf sperm whales. Ventral grooves are long grooves found only on balaenopterine whales. Ventral grooves should be counted between the flippers.

It is difficult to overstress the importance of data from stranded cetaceans. For some species, the only data available have come from stranded individuals. By carefully gleaning from each specimen all the data that can be collected, you will make a valuable addition to the body of knowledge on these elusive animals.

APPENDIX E

LIST OF INSTITUTIONS TO CONTACT REGARDING STRANDED CETACEANS

The following list includes many of the institutions in the area covered by this guide, which are likely to respond to calls about stranded cetaceans. The institutions on the mainland are listed roughly in order from north to south, following the contour of the coast. Several island institutions and organizations are also listed.

These institutions are the ones that come to mind as having taken an active interest in cetacean strandings in the recent past. In addition to these, almost any university biology or zoology department, State or Federal conservation agency or marine laboratory, or local natural history museum or society can recommend an interested biologist if no staff member is interested. Such organizations are widely distributed on or near the coasts and are usually adequately listed in local telephone directories.

It should be obvious that organizations such as oceanaria are the most likely ones to be interested in live animals on an emergency basis. Even so, these organizations often cooperate with biologists with whom they are familiar and so will pick up dead animals for them as well. Conversely, museums and the like are most interested in the dead animals as they have no facilities for handling live ones. Nevertheless, they often cooperate with institutions equipped to handle live animals and will usually help in making arrangements for picking up the live ones. Therefore, rather than the finder's making a decision as to whether or not an institution should be called because the animal is alive or dead, we would urge that the nearest organization in the following list be contacted under any circumstances.

Space is provided at the end of the list for additions of contacts inadvertently overlooked in compiling this list, or of institutions which come into being after its publication.

CANADA

Newfoundland
  Department of Biology, Memorial University of Newfoundland, St. John's.

Nova Scotia
  Bedford Institute, Dartmouth.
  Departments of Biology, Psychology and/or Physiology, Dalhousie University, Halifax.
  Nova Scotia Museum, Halifax.

Quebec
  Arctic Unit, Fisheries Research Board of Canada, Ste. Anne de Bellevue.

Ontario
  Department of Zoology, University of Guelph, Guelph.

UNITED STATES

Maine
  see Massachusetts.

New Hampshire
  see Massachusetts.

Massachusetts
  Woods Hole Oceanographic Institution, Woods Hole.
  New England Aquarium, Central Wharf, Boston.
  Museum of Comparative Zoology, Harvard University, Cambridge.

Rhode Island
  Narragansett Marine Laboratory, University of Rhode Island, Kingston.

Connecticut
  Mystic Marine Life Aquarium, Mystic.

New York
  New York Aquarium, Coney Island, Brooklyn.
  American Museum of Natural History, Department of Mammals, New York City.

New Jersey
  Department of Biochemistry, Rutgers University, New Brunswick.
  also see New York.

Delaware
  see New York.
  see New Jersey.

Maryland
  Department of Pathobiology, Johns Hopkins University, Baltimore.
  also see District of Columbia.

District of Columbia
  Division of Mammals, United States National Museum.

Virginia
  Virginia Institute of Marine Science, Gloucester Point.
  also see District of Columbia.

North Carolina
  Duke Marine Laboratory, Beaufort.
  Institute of Fisheries Research, University of North Carolina, Morehead City.

South Carolina
  Charleston Museum, Charleston.
  Grice Marine Biological Laboratory, College of Charleston, Charleston.

Georgia
  The Georgia Conservancy, The Clusky Building, 127 Abercorn Street, Savannah.
  University of Georgia Marine Institute, Sapelo Island (Darien).

Florida
  Marineland of Florida, St. Augustine
  University of Florida Biocommunication and Marine Mammal Research Facility, St. Augustine.

Ocean World, Ft. Lauderdale.
Wometco Miami Seaquarium, Miami.
University of Miami School of Marine and Atmospheric Sciences, Miami.
Sea World, Orlando.
Mote Marine Laboratory, Placida.
Mote Marine Laboratory, Sarasota.
Aquatarium, St. Petersburg Beach.
Florida's Gulfarium, Ft. Walton Beach.

Alabama
see Florida (Florida's Gulfarium).
see Mississippi.

Mississippi
Gulf Coast Research Laboratory, Ocean Springs.

Louisiana
Museum of Natural Science, Louisiana State University, Baton Rouge.
Marine Life Park, Gulfport.

Texas
Sea-Arama Marineworld, Galveston.
Department of Wildlife and Fisheries Sciences, Texas A&M University, College Station.
Department of Zoology, University of Corpus Christi, Corpus Christi.
University of Texas, Marine Science Institute, Port Aransas.

Puerto Rico
Commercial Fisheries Laboratory, Department of Agriculture, Commonwealth of Puerto Rico, Mayaguez.
Department of Agriculture, Commonwealth of Puerto Rico, Santurce (San Juan).

Virgin Islands
Caribbean Research Institute, Red Hook, St. Thomas.

OTHERS

Mexico
Instituto Nacionale de Investigaciones Biologia Pesquera, Division de Vertebrados Marinos, Mexico 7, D.F.
also see Texas.

Venezuela
Universidad de Oriente, Nucleo de Nueva Esparta, Isla Margarita.

Jamaica
Department of Zoology, University of the West Indies, Mona (Kingston).
Science Museum, Institute of Jamaica, Kingston.

Bahamas
Lerner Marine Laboratory, Bimini.
Nassau Aquarium, Nassau, New Providence.

Bermuda
Bermuda Biological Station, St. George's.
Government Aquarium and Museum, Flatts.

Cuba
Laboratorio de Vertebrados, Instituto de Biologia, Academie de Ciencias de Cuba, Havana.

SIGHTING INFORMATION

DATE AND LOCAL TIME ______ LOCATION ______

WEATHER CONDITIONS ______

OCEANOGRAPHIC CONDITIONS ______

SPECIES ______ NUMBER OF ANIMAL(S) ______

HEADING OF ANIMAL(S) (MAGNETIC) ______ SPEED OF ANIMAL(S) (KNOTS) ______

ASSOCIATED ORGANISMS ______

TAGS OR UNUSUAL MARKINGS ______

CHARACTERISTICS OBSERVED WHICH RESULTED IN SPECIES IDENTIFICATION ______

BEHAVIOR OF ANIMAL(S) ______

SKETCHES

PHOTOS AVAILABLE YES ______ NO ______

ADDITIONAL REMARKS ______

NAME AND ADDRESS OF OBSERVER (SHIP OR A/C) ______

CETACEAN DATA RECORD

SPECIES ________________ SEX ______ LENGTH ______ WEIGHT ______

DATE/TIME STRANDED ____________ DATE/TIME DATA COLLECTED ____________

LOCATION OF COLLECTION ________________________

OBSERVER NAME/ADDRESS ________________________

SPECIMEN SENT TO ________________________

MEASUREMENTS:

		Straight line parallel to the body axis	Point to point
1.	Tip of upper jaw to deepest part of fluke notch	________	________
2.	Tip of upper jaw to center of anus	________	________
3.	Tip of upper jaw to center of genital slit	________	________
4.	Tip of lower jaw to end of ventral grooves		________
5.	Tip of upper jaw to center of umbilicus	________	________
6.	Tip of upper jaw to top of dorsal fin	________	________
7.	Tip of upper jaw to leading edge of dorsal fin	________	
8a.	Tip of upper jaw to anterior insertion of flipper (right)	________	________
b.	Tip of upper jaw to anterior insertion of flipper (left)	________	________
9.	Tip of upper jaw to center of blowhole(s)	________	________
10.	Tip of upper jaw to anterior edge of blowhole(s)	________	________
11a.	Tip of upper jaw to auditory meatus (right)	________	________
b.	Tip of upper jaw to auditory meatus (left)	________	________
12a.	Tip of upper jaw to center of eye (right)	________	________
b.	Tip of upper jaw to center of eye (left)	________	________
13.	Tip of upper jaw to angle of gape		________
14.	Tip of upper jaw to apex of melon	________	
15.	Rostrum - maximum width		________
16.	Throat grooves - length	________	________

		Straight line parallel to the body axis	Point to point
17.	Projection of lower jaw beyond upper (if reverse, so state)	________	
18.	Center of eye to center of eye		________
19a.	Height of eye (right)	________	
b.	Height of eye (left)	________	
20a.	Length of eye (right)	________	
b.	Length of eye (left)	________	
21a.	Center of eye to angle of gape (right)	________	________
b.	Center of eye to angle of gape (left)	________	________
22a.	Center of eye to external auditory meatus (right)	________	________
b.	Center of eye to external auditory meatus (left)	________	________
23a.	Center of eye to center of blowhole (right)	________	________
b.	Center of eye to center of blowhole (left)	________	________
24.	Blowhole length	________	
25.	Blowhole width	________	
26.	Flipper width (right)		________
27.	Flipper width (left)		________
28a.	Flipper length - tip to anterior insertion (right)	________	
b.	Flipper length - tip to anterior insertion (left)	________	
29a.	Flipper length - tip to axilla (right)	________	
b.	Flipper length - tip to axilla (left)	________	
30.	Dorsal fin height	________	
31.	Dorsal fin base	________	
32.	Fluke span	________	
33.	Fluke width	________	
34.	Fluke depth of notch	________	

		Straight line parallel to the body axis	Point to point
35.	Notch of flukes to center of anus	____________	
36.	Notch of flukes to center of genital aperture	____________	____________
37.	Notch of flukes to umbilicus	____________	
38.	Notch of flukes to nearest point on leading edge of flukes	____________	
39.	Girth at anus		____________
40.	Girth at axilla		____________
41.	Girth at eye		____________
42.	Girth ________ cm in front of notch of flukes		____________
43a.	Blubber thickness (middorsal)		____________
b.	Blubber thickness (lateral)		____________
c.	Blubber thickness (midventral)		____________
44.	Width of head at post-orbital process of frontals	____________	
45.	Tooth counts: right upper ____________		
	right lower ____________		
	left upper ____________		
	left lower ____________		
46.	Baleen counts: right upper ____________		
	left upper ____________		
47.	Baleen plates, length longest		____________
48.	Baleen plates, no. bristles/cm over 5 cm	____________	
49a.	Mammary slit length (right)		____________
b.	Mammary slit length (left)	____________	
50.	Genital slit length	____________	
51.	Anal slit length	____________	

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